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IMPROVING SCHOOL MATHEMATICS

WORKBOOK

TEACHERS' EDITION

QA

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1973

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Accompanying
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E3415 1969
CURR AV



Investigating School Mathematics

Workbook

ROBERT E. EICHOLZ

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CHARLES R. FLEENOR

TEACHERS' EDITION



ADDISON-WESLEY (CANADA) LTD.

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1

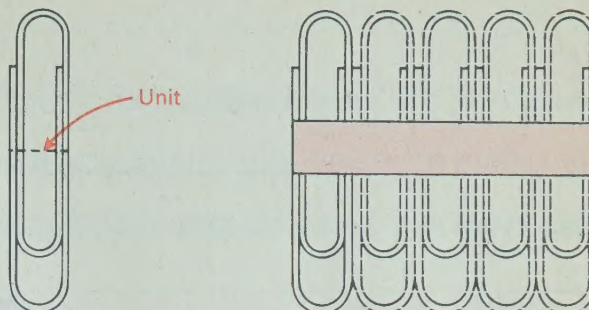
Numbers and Measurement

● Counting Units to Find Length

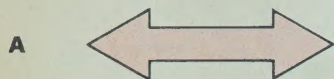
To measure the length of an object, we need to choose a **unit** of length.

If the unit chosen is the distance across a paper clip,

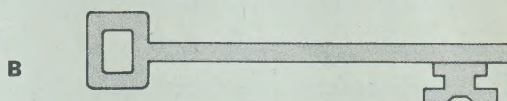
then the length of the bar is 6 units.



1. Use a paper-clip unit to measure the length of each object.

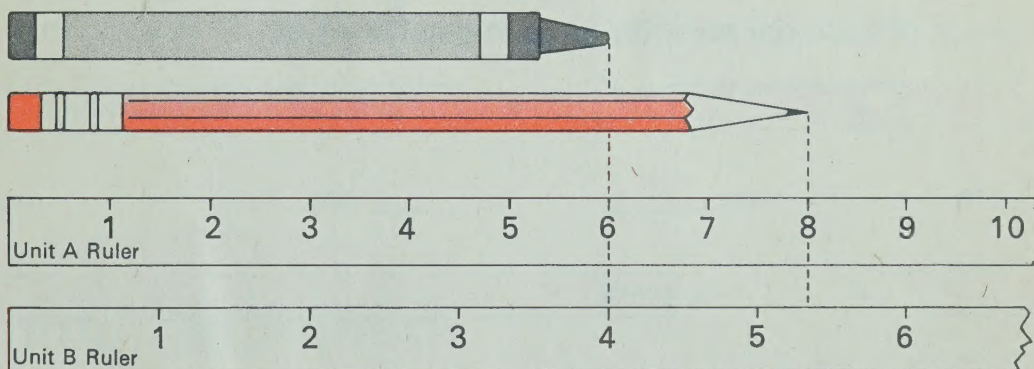


4 units



7 units

2. Use the two rulers below to help you fill in the blanks.



Unit A

Unit B

A Using unit A, the length of the crayon is 6.

Using unit B, it is 4.

B Using unit A, the length of the pencil is 8.

Using unit B, the length of the pencil to the nearest unit is 5.

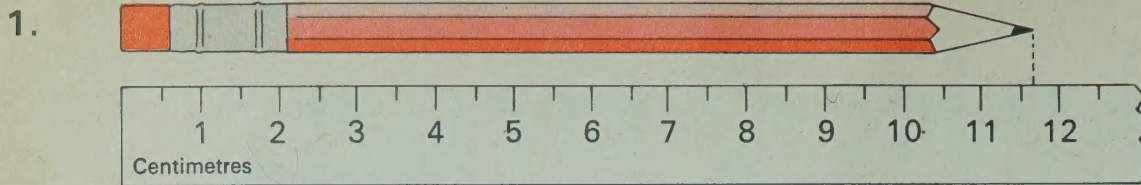
C If the length of an object is 9 using unit A,

then its length is 6 using unit B.

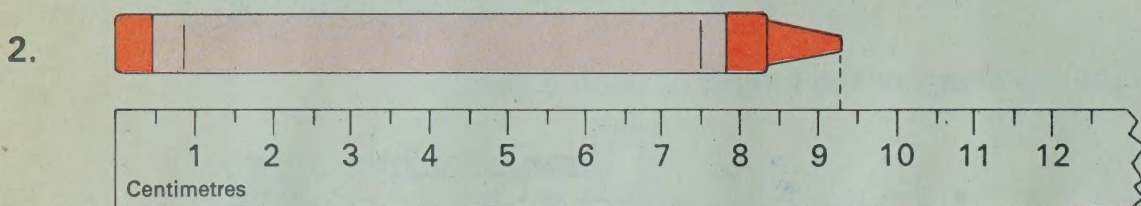
D If the length of an object is 8 using unit B,

then its length is 12 using unit A.

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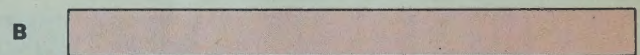
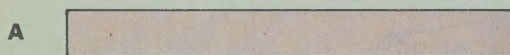


- A The length of the pencil is between 11 and 12 centimetres.
 B The length is nearer to 12 centimetres than to 11 centimetres.
 C **To the nearest centimetre**, the length of the pencil is 12 centimetres.



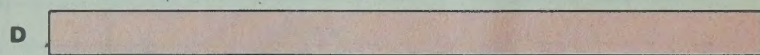
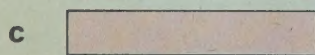
- A The length of the crayon is between 9 and 10 centimetres.
 B The length is nearer to 9 centimetres than to 10 centimetres.
 C **To the nearest centimetre**, the length of the crayon is 9 centimetres.

3. Give the length of each bar **to the nearest centimetre**.



6 cm

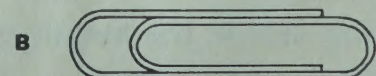
7 cm



3 cm

9 cm

4. Give the length of each object **to the nearest centimetre**.



10 centimetres

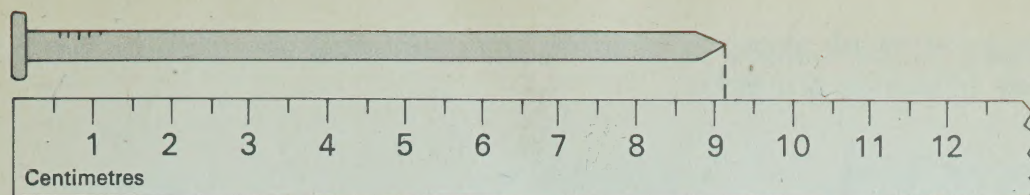
4 centimetres



11 centimetres

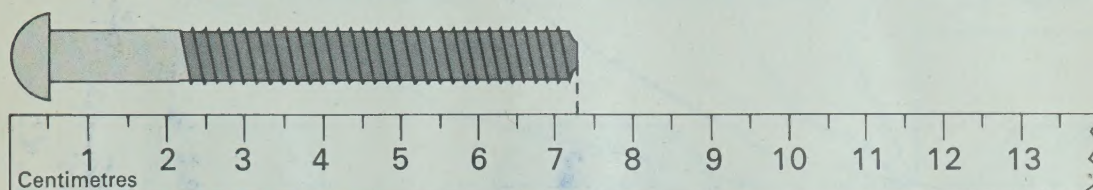
2 centimetres

1.



- A The length of the nail is between $9\frac{1}{2}$ and 9 cm.
 B The length of the nail is nearer to 9 cm than to $9\frac{1}{2}$ cm.
 C To the nearest half cm, the length of the nail is 9 cm.

2.

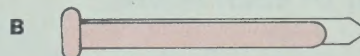


- A The length of the bolt is between 7 and $7\frac{1}{2}$ centimetres.
 B Its length is nearer to $7\frac{1}{2}$ centimetres than to 7 centimetres.
 C To the nearest half centimetre, the length of the bolt is $7\frac{1}{2}$ centimetres.

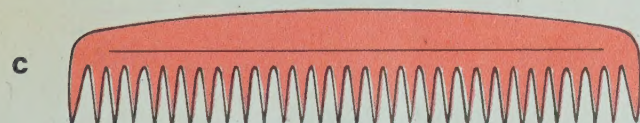
3. Give the length of each object to the nearest half cm.



$6\frac{1}{2}$ cm



$3\frac{1}{2}$ cm

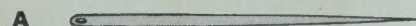


$7\frac{1}{2}$ cm



1 cm

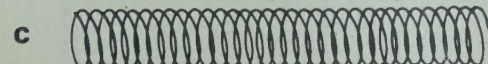
4. Give the length of each object to the nearest half centimetre.



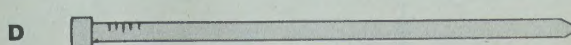
$4\frac{1}{2}$ centimetres



8 centimetres

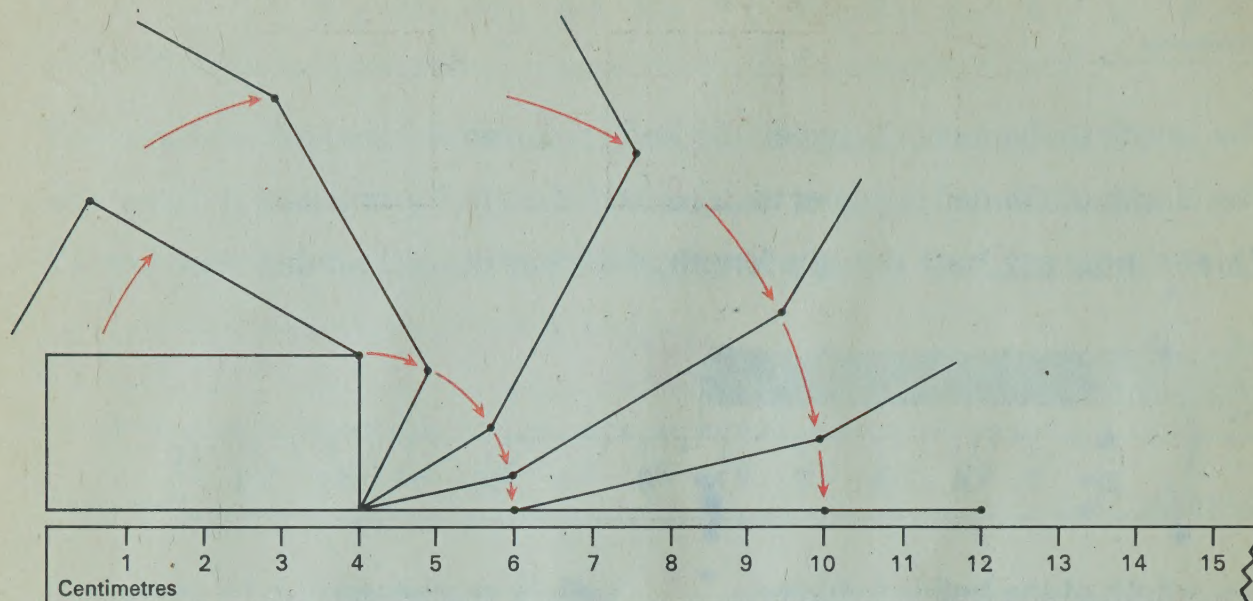


$5\frac{1}{2}$ centimetres

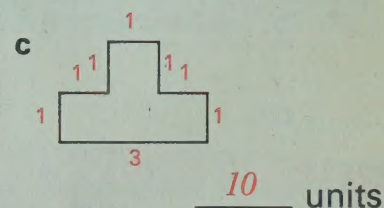
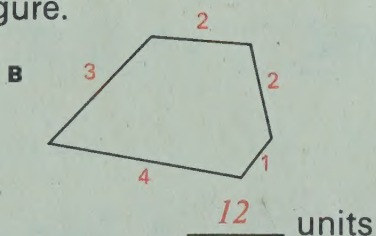
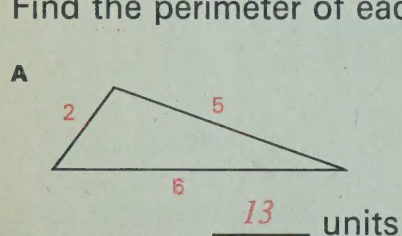


$6\frac{1}{2}$ centimetres

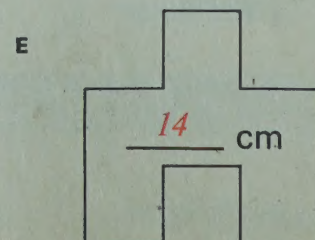
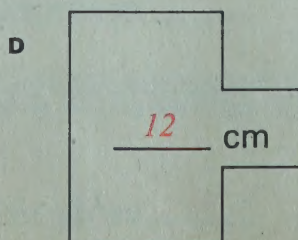
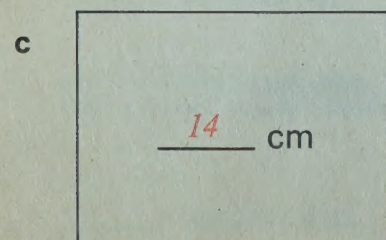
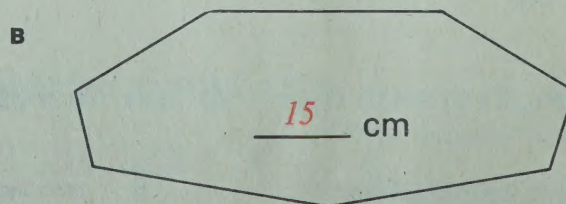
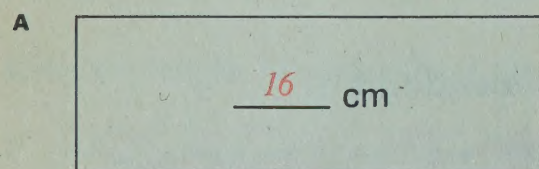
1. The figure will help you think about "unfolding" the rectangle to find its **perimeter** (distance around).




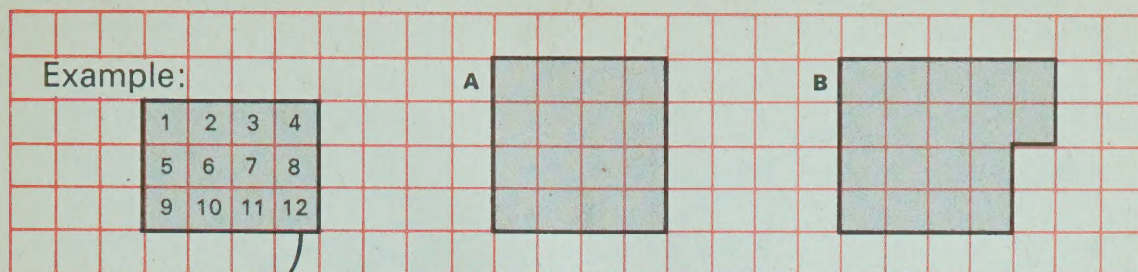
- A The lengths of the four sides of the rectangle are 4, 2, 4, and 2 centimetres.
 B The perimeter of the rectangle is 12 centimetres.
2. The length of each side of the figure is given.
 Find the perimeter of each figure.



3. Use your centimetre ruler to find the perimeter of each figure.

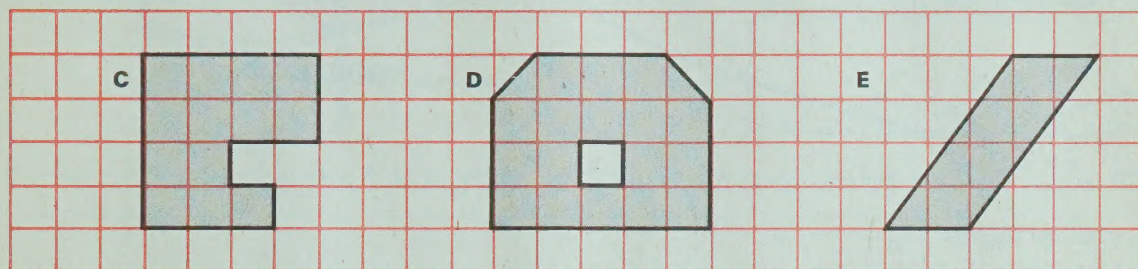


1. Find the number of square units (area) of each shaded region. The unit is .



12

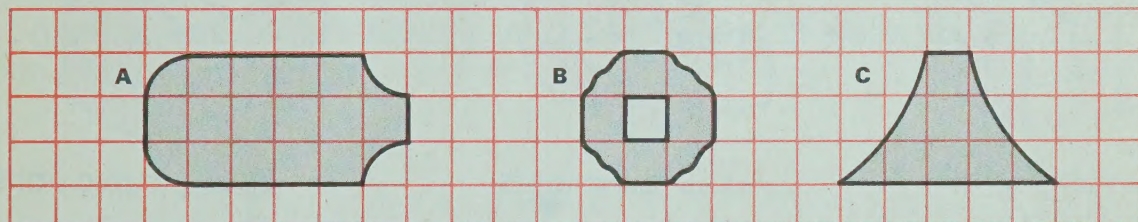
square units 16 square units 18 square units



13

square units 18 square units 8 square units

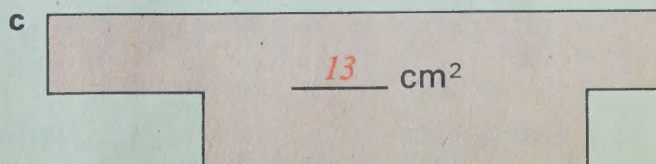
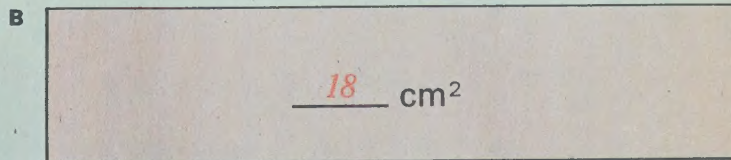
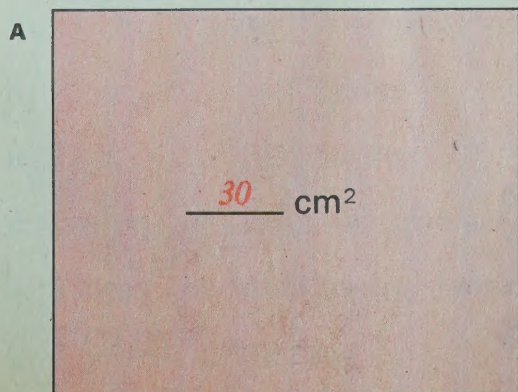
2. Estimate the area of each shaded region. *Answers may vary.*




16

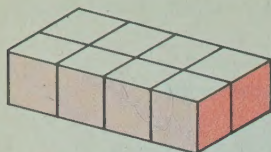
square units 6 square units 7 square units

3. Find the area of each rectangular region.
Use your centimetre ruler in parts **B** and **C**.



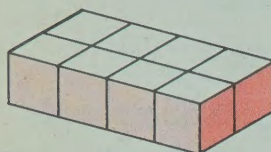
1. Give the volume of each figure. This  is the unit.

A



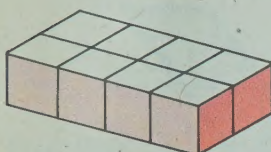
8 cubic units

B



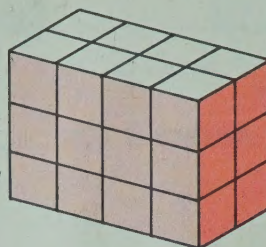
8 cubic units

C



8 cubic units

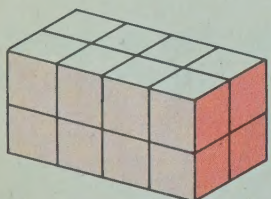
D



24 cubic units

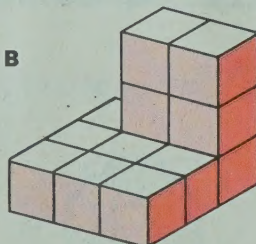
2. Give the volume of each figure.

A



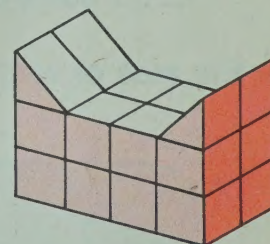
16 cubic units

B



13 cubic units

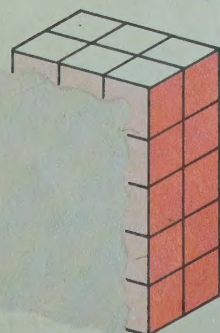
C



18 cubic units

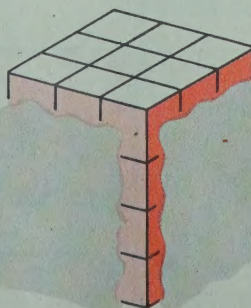
3. Find the volume of each figure even though parts of the figures are covered.

A



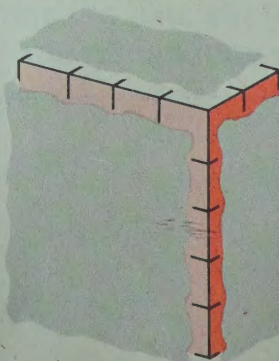
30 cubic units

B



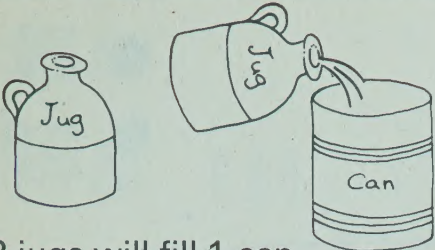
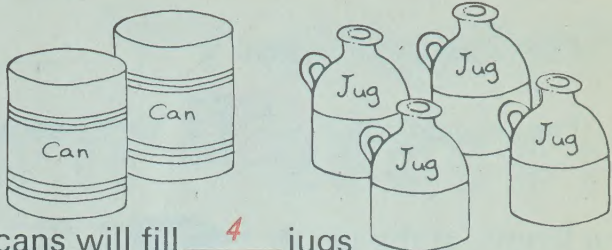
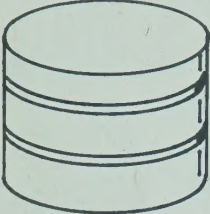
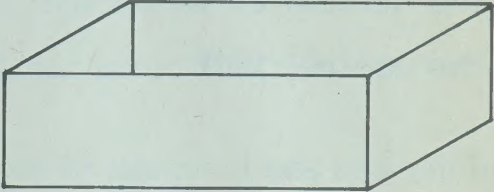

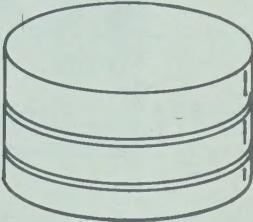

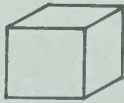
36 cubic units

C



40 cubic units

1. Give the missing numbers in the table

Since:	We know that:
 <p>2 jugs will fill 1 can</p>	 <p>2 cans will fill <u>4</u> jugs</p>
 <p>1 litre of water weighs 1 kilogram</p>	 <p>6 kilograms of water will fill a <u>6</u> litre container</p>
 <p>1 gram of water is 1 / 1000 of a litre</p>	 <p>2000 grams of water equals <u>2</u> litres</p>
 <p>1 gram of water equals 1 cubic centimetre</p>	 <p>5 cm³ is equal to <u>5</u> grams of water</p>

2. Put a ring around the amount of water that is more.

A 1 kilogram or 2 litres

F 1000 cm³ or 2 litres

B 2 litres or 300 grams

G 2 kilograms or 500 cm³

C 1 kilogram or 300 grams

H 500 grams or 4 $\frac{1}{2}$ litres


D 3 litres or 4000 cubic centimetres


I 22 cm³ or 14 kilograms

E 4 grams or 6 cm³

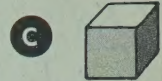
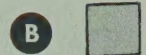
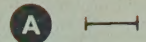
J 1000 grams or $\frac{1}{2}$ litre


1. Name the unit (A, B, or C) that you would use to find each of the following measurements.

A The amount of space inside a  . C

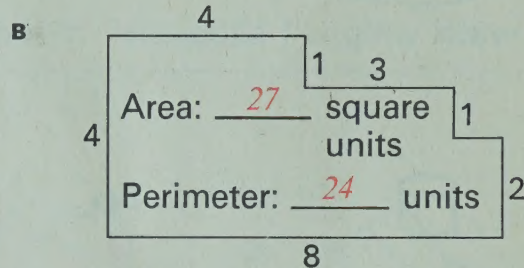
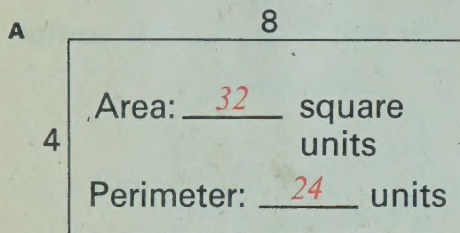
B The distance across a  . A

c The amount of a  that needs paint. B

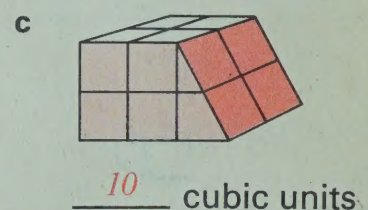
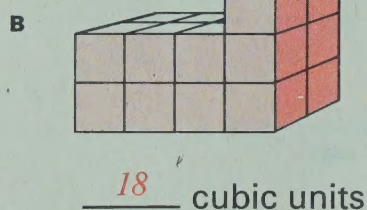
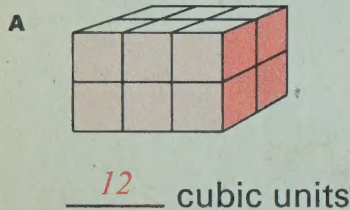


2. The length of the brush  to the nearest centimetre is 10 centimetres,
to the nearest half cm is 10½ cm.

3. Find the area and perimeter of each figure.

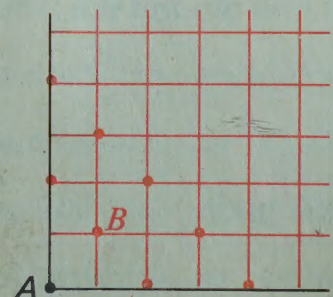


4. Find the volume of each figure.



CHANGE OF PACE

The figure represents streets in a town. Mark with a dot all possible ending points if you start at A and walk 4 blocks along the streets without retracing your steps. Each unit (—) is one block. Put the letter B beside the dot that is closest to A.



1. Write the numerals.



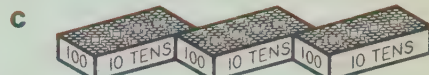
4 tens and 3

We write 43.



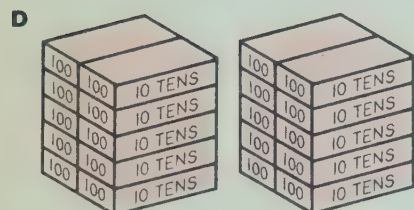
5 tens and 2

We write 52.

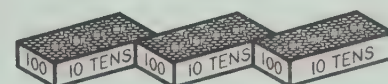


3 hundreds, 5 tens, and 2

We write 352.



2 thousands



3 hundreds



6 tens



5 ones

For this number of sticks, we write 2365.

2. Write a numeral for each exercise.

A 3 tens and 6 ones 36.

B 8 hundreds, 0 tens, and 3 ones 803.

C 2 thousands, 9 hundreds, 6 tens, and 4 ones 2964.

3. Give the missing digits.

A 365 means 3 hundreds, 6 tens, and 5 ones.

B 608 means 6 hundreds, 0 tens, and 8 ones.

C 1390 means 1 thousands, 3 hundreds, 9 tens, and 0 ones.

4. Solve the equations.

A $34 = 30 + \underline{4}$

B $58 = \underline{50} + 8$

C $18 = \underline{10} + 8$

D $654 = 600 + 50 + \underline{4}$

E $837 = \underline{800} + 30 + 7$

F $546 = 500 + \underline{40} + 6$

G $4321 = 4000 + \underline{300} + 20 + 1$

H $7895 = \underline{7000} + 800 + 90 + 5$

1. Write **thousands, hundreds, tens, or ones** in each blank.

- A In 6⁵4, the ⁵ means 5 tens.
- B In 6²51, the ² means 2 hundreds.
- C In 873⁴, the ⁴ means 4 ones.
- D In ⁹165, the ⁹ means 9 thousands.

2. Write a numeral for each exercise.

- A 7 thousands, 8 hundreds, 5 tens, and 6 ones 7856.
- B 2 hundreds, 5 ones, 9 thousands, and 3 tens 9235.
- C 3 hundreds, 0 tens, 7 ones, and 5 thousands 5307.

3. Find the sums.

- A $7000 + 800 + 20 + 6$ 7826 C $4000 + 300 + 60 + 1$ 4361
- B $5000 + 200 + 7 + 80$ 5287 D $700 + 3 + 8000 + 60$ 8763

4. Solve the equations.

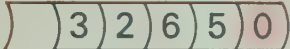
- A $3749 = 3000 + 700 + 40 + \underline{9}$
- B $2562 = 2000 + \underline{500} + 60 + 2$
- C $6113 = 6000 + 100 + \underline{10} + 3$
- D $18\,589 = 10\,000 + \underline{8000} + 500 + 80 + 9$
- E $95\,250 = 90\,000 + 5000 + \underline{200} + 50$
- F $348\,100 = 300\,000 + \underline{40\,000} + 8000 + 100$

5. Write the numerals for the numbers that are **one less** and **one more** than the numbers given.

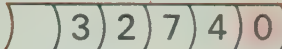
- | | | | | | | | |
|---|-------------|------|-------------|---|-----------------|----------|-----------------|
| A | <u>698</u> | 699 | <u>700</u> | D | <u>8998</u> | 8999 | <u>9000</u> |
| B | <u>1000</u> | 1001 | <u>1002</u> | E | <u>89\,998</u> | 89\,999 | <u>90\,000</u> |
| C | <u>3678</u> | 3679 | <u>3680</u> | F | <u>899\,998</u> | 899\,999 | <u>900\,000</u> |

6. Write the correct numeral for each exercise.

- A 8 ten thousands, 5 thousands, 2 hundreds, and 2 tens 85\,220
- B 7 hundred thousands, 9 ten thousands, and 2 thousands 792\,000

1. **A** 

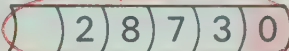
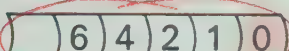
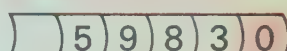
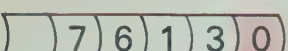
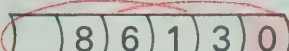
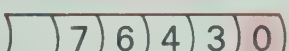
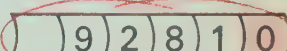
This odometer shows that car A has travelled 3265 km.

B 

This odometer shows that car B has travelled 3274 km.

Which car has travelled farther? B

2. For each pair of odometers, put a ring around the one that shows the greater number of kilometres.

A 		D 	
B 		E 	
C 		F 	

3. Write the correct sign ($<$ or $>$) in each .

A 5278 $>$ 5268	D 6125 $>$ 6025	G 8346 $<$ 9071
B 2614 $<$ 2674	E 7183 $>$ 7099	H 8468 $>$ 2498
C 3572 $<$ 4572	F 8651 $>$ 8649	I 6521 $<$ 7000

4. List the following set of numbers in order, starting with the smallest.

3426	2951	3265	2987	3333
<u>2951</u>	<u>2987</u>	<u>3265</u>	<u>3333</u>	<u>3426</u>
smallest				largest

5. The area of island A is 3435 square kilometres.
The area of island B is 2868 square kilometres.

Which island is larger? A

6. There are 274 448 people in City A and 274 359 people in City B.

Which city has more people? City A

7. The airline distance between Vancouver and Montreal is 4892 kilometres. The distance between San Francisco and Montreal is 5065 kilometres.

Which city is farther from Montreal? San Francisco

1.

246 378

↑

These digits tell the number of **thousands**.

There are **246 thousands** in 246 378.

318 512 439

↑

These digits tell the number of **millions**.

There are **318 millions** in 318 512 439.

 - A In 315 142 there are 315 thousands.
 - B In 48 856 there are 48 thousands.
 - C In 809 209 there are 809 thousands.
 - D In 7327 there are 7 thousands.
 - E In 276 519 206 there are 276 millions.
 - F In 76 309 516 there are 76 millions.
 - G In 8 652 185 there are 8 millions.
 - H In 206 984 469 there are 206 millions.
 2.
 - A In 265 327 461 there are 265 millions and 327 thousands.
 - B In 46 370 659 there are 46 millions and 370 thousands.
 - C In 500 062 327 there are 500 millions and 62 thousands.
 - D In 3 008 605 there are 3 millions and 8 thousands.
 - E In 314 209 651 there are 314 millions and 209 thousands.
 - F In 280 406 721 there are 280 millions and 406 thousands.
 3. Write the number that is:
 - A 1000 more than 286 573 287 573
 - B 100 more than 2 365 483 2 365 583
 - C 100 000 more than 3 256 348 3 356 348
 - D 1000 more than 15 327 651 15 328 651
 - E 1 000 000 more than 27 326 518 28 326 518
 - F 100 000 more than 14 327 602 14 427 602
 - G 100 000 more than 51 278 651 51 378 651
 - H 1 000 000 more than 29 356 289 30 356 289
 - I 10 000 000 more than 7 836 427 17 836 427

1. Give the number that is **one more** than:

A 9 10

E 199 200

I 5399 5400

B 19 20

F 499 500

J 9999 10 000

C 99 100

G 999 1000

K 10 999 11 000

D 109 110

H 1099 1100

L 309 999 310 000

2. Give the number that is **one less** than:

A 10 9

E 1000 999

I 11 730 11 729

B 100 99

F 5400 5399

J 13 700 13 699

C 190 189

G 7220 7219

K 27 000 26 999

D 400 399

H 9200 9199

L 624 010 624 009

3. Complete the table by giving the number that is 1, 10, 100, or 1000 more than the given number.

Given number	1 more	10 more	100 more	1000 more
3765	3766	3775	3865	4765
4283	4284	4293	4383	<u>5283</u>
6241	6242	6251	<u>6341</u>	<u>7241</u>
5243	<u>5244</u>	<u>5253</u>	<u>5343</u>	<u>6243</u>
16 704	<u>16 705</u>	<u>16 714</u>	<u>16 804</u>	<u>17 704</u>
375 038	<u>375 039</u>	<u>375 048</u>	<u>375 138</u>	<u>376 038</u>

4. Using the digits at the right, form the correct 5-digit numeral for each part.



A What is the largest number you can make? 54 321

B What is the smallest number you can make? 12 345

C Give the smallest number that has the digit 1 in the ones place. 23 451

D Give the largest number that has the digit 5 in the ones place. 43 215

E What is the largest number you can make that has the digit 2 in the thousands place? 52 431

1. Write **thousands, hundreds, tens, or ones** in each blank.


- A In 2658, the 6 means 6 hundreds.
- B In 3472, the 2 means 2 ones.
- C In 4362, the 4 means 4 thousands.
- D In 5280, the 8 means 8 tens.

2. Solve the equations.

- A $58 = \underline{50} + 8$
- B $327 = \underline{300} + 20 + 7$
- C $286 = 200 + 80 + \underline{6}$
- D $504 = \underline{500} + 4$

3. A What number is 100 less than 2365? 2265
- B What number is 1 more than 1999? 2000
- C What number is 1000 less than 4628? 3628

4. Give the correct sign ($<$ or $>$) for each .

- A 561  661 B 3472  3462 C 6427  6399 D 17 281  17 290

5. A In 23 486 327 there are 23 millions and 486 thousands.
- B In 340 286 510 there are 340 millions and 286 thousands.
- C In 9 300 654 there are 9 millions and 300 thousands.

6. Write each numeral as in the example. Example: $3264 = 3000 + 200 + 60 + 4$

- A $278 = \underline{200 + 70 + 8}$
- B $5643 = \underline{5000 + 600 + 40 + 3}$
- C $78\ 649 = \underline{70\ 000 + 8000 + 600 + 40 + 9}$

CHANGE OF PACE



Jim is 115 cm tall. At a certain time of day his shadow is 230 cm long. At this same time,





- A how long is his sister's shadow if she is 1 m tall? 2 m
- B how long is his father's shadow if he is 180 cm tall? 360 cm
- C how tall is his mother if her shadow is 340 cm long? 170 cm
- D how tall is his house if its shadow is 16 m long? 8 m

3

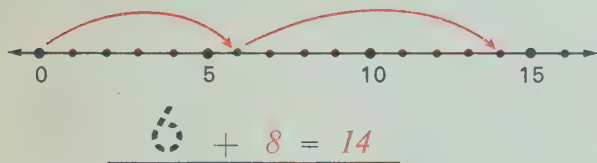
Addition and Subtraction

● Missing Addends

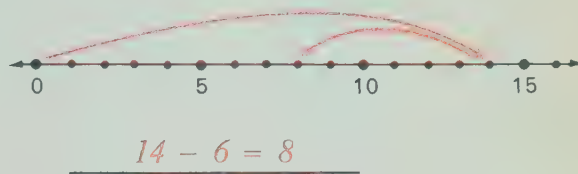
1. A There are 5 of these .
- B There are 3 of these .
- C There are 8 shapes in all.



2. Write an addition equation for the number-line picture.



3. Write a subtraction equation for the number-line picture.



4. You can find differences by thinking about missing addends.

This addend is the same number as this difference.

$$? + 8 = 13$$



$$13 - 8 = \boxed{5}$$

5. Find each difference by first finding the missing addend.

A $\boxed{8} + 6 = 14$

$$14 - 6 = \boxed{8}$$

B $\boxed{4} + 9 = 13$

$$13 - 9 = \boxed{4}$$

C $\boxed{8} + 4 = 12$

$$12 - 4 = \boxed{8}$$

6. A Since $57 + 84 = 141$, we know that $141 - 84 = \underline{57}$.
- B Since $43 + 69 = 112$, we know that $112 - 69 = \underline{43}$
and $112 - 43 = \underline{69}$.
- C Since $75 + 66 = 141$, we know that $141 - 75 = \underline{66}$
and $141 - 66 = \underline{75}$.

Complete each table.

1.

	Add 6	
	4	10
A	7	13
B	9	15
C	3	9

2.

	Add 9	
	7	16
A	7	16
B	4	13
C	1	10
D	0	9

3.

	Subtract 8	
	13	5
A	11	3
B	17	9
C	15	7

4.

	Subtract 6	
	12	6
A	12	6
B	9	3
C	14	8
D	11	5

5. Find the sums and differences.

A $\begin{array}{r} 3 \\ +6 \\ \hline 9 \end{array}$

B $\begin{array}{r} 9 \\ -2 \\ \hline 7 \end{array}$

C $\begin{array}{r} 7 \\ +7 \\ \hline 14 \end{array}$

D $\begin{array}{r} 14 \\ -3 \\ \hline 11 \end{array}$

E $\begin{array}{r} 5 \\ +6 \\ \hline 11 \end{array}$

F $\begin{array}{r} 11 \\ +5 \\ \hline 16 \end{array}$

G $\begin{array}{r} 8 \\ +5 \\ \hline 13 \end{array}$

H $\begin{array}{r} 9 \\ +5 \\ \hline 14 \end{array}$

I $\begin{array}{r} 4 \\ +6 \\ \hline 10 \end{array}$

J $\begin{array}{r} 10 \\ -7 \\ \hline 3 \end{array}$

K $\begin{array}{r} 12 \\ -8 \\ \hline 4 \end{array}$

L $\begin{array}{r} 3 \\ +9 \\ \hline 12 \end{array}$

M $\begin{array}{r} 13 \\ -4 \\ \hline 9 \end{array}$

N $\begin{array}{r} 9 \\ +6 \\ \hline 15 \end{array}$

6. Give the missing numbers in the tables.

	Addend	Addend	Sum
A	8	3	11
B	4	7	11
C	7	6	13
D	5	9	14

	Addend	Addend	Sum
E	6	9	15
F	7	7	14
G	8	2	10
H	8	9	17

7. 16 marbles. Lost 9.

How many left? 7

8. Have 8 shells. Found 7 more.

How many shells? 15

9. Have 7 cats. Get 4 more.

How many in all? 11

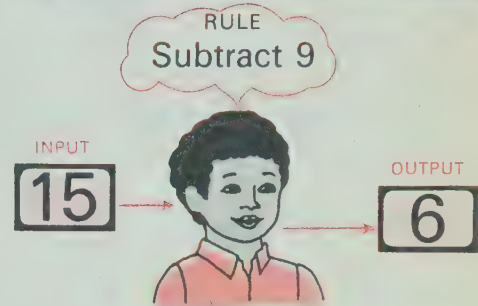
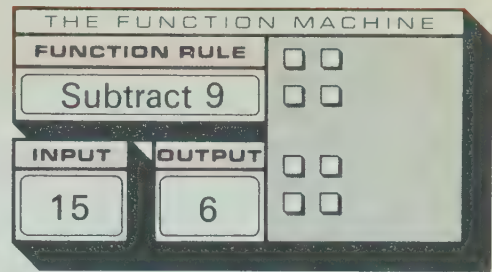
10. 17 cookies. Ate 9.

How many left? 8

1. When the number 15 is put into the function machine and the function rule is "subtract 9," the output number is 6.

Study the second row of the table. Then complete the table.

Function Rule	
Subtract 9	
INPUT	OUTPUT
15	6
13	4
A 11	2
B 10	1



In exercises 2 through 9, give the missing numbers and function rules.

2.

Function Rule	
Add 8	
INPUT	OUTPUT
6	14
9	17
A 8	16
B 7	15
C 5	13

3.

Function Rule	
Subtract 7	
INPUT	OUTPUT
11	4
A 13	6
B 16	9
C 15	8
D 14	7

4.

Function Rule	
Add 6	
INPUT	OUTPUT
A 8	14
B 7	13
C 9	15
D 6	12
E 4	10

5.

Function Rule	
Subtract 5	
INPUT	OUTPUT
A 11	6
B 14	9
C 10	5
D 12	7
E 13	8

6.

Function Rule	
Subtract 6	
INPUT	OUTPUT
7	1
6	0
8	2
B 15	9
C 14	8

7.

Function Rule	
Add 1 if odd; Subt. 1 if even	
INPUT	OUTPUT
7	8
6	5
A 5	6
B 8	7
C 3	4

8.

Function Rule	
Double and add 1	
INPUT	OUTPUT
7	15
6	13
A 5	11
B 8	17
C 9	19

9.

Function Rule	
Double and subtract 1	
INPUT	OUTPUT
8	15
3	5
6	11
B 5	9
C 2	3

1. Solve the equations.

- A Since $9 + 8 = 17$, we know that $8 + 9 = \underline{17}$.
- B Since $56 + 78 = 134$, we know that $78 + 56 = \underline{134}$.
- C $19 + 56 = \underline{56} + 19$ E $327 + 761 = 761 + \underline{327}$
- D $27 + \underline{81} = 81 + 27$ F $\underline{832} + 956 = 956 + 832$

When we change the **order** of the addends, we get the same sum.

2. Solve the equations.

- A Since $8 + (7 + 2) = 17$, we know that $(8 + 7) + 2 = \underline{17}$.
- B Since $(36 + 28) + 95 = 159$, we know that $36 + (28 + 95) = \underline{159}$.
- C $(7 + 8) + 6 = 7 + (8 + \boxed{6})$ D $24 + (\boxed{19} + 32) = (24 + 19) + 32$
- E $17 + (86 + 59) = (\boxed{17} + 86) + 59$

When we add, we can change the **grouping** and get the same sum.

3. Find the sums. Look for combinations that make 10. Remember:

Because of the **order** and **grouping** principles, we can **add any two** addends first and get the same sum.

- A $3 + 8 + 2 + 6 = \underline{19}$ B $5 + 4 + 3 + 5 = \underline{17}$
- C $7 + 2 + 6 + 8 = \underline{23}$ D $4 + 7 + 6 + 5 = \underline{22}$
- E $6 + 8 + 4 + 2 = \underline{20}$ F $9 + 6 + 3 + 1 = \underline{19}$

4. Solve the equations.

- A $7 + 0 = \underline{7}$ B $\underline{11} + 0 = 11$ C $23 + \underline{0} = 23$
- D $47 + \underline{0} = 47$ E $\underline{0} + 19 = 19$ F $0 + \underline{32} = 32$

The sum of any number and zero is that number.

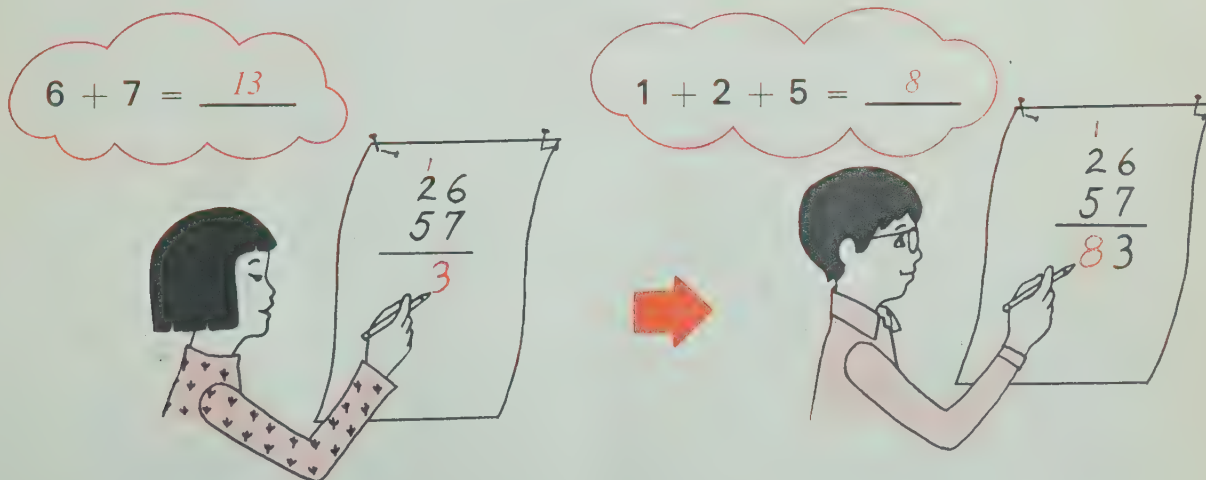
1. Find the sums.

A $\begin{array}{r} 20 \\ + 40 \\ \hline 60 \end{array}$ $\begin{array}{r} 20 \\ + 40 \\ \hline 63 \end{array}$ $\begin{array}{r} 20 \\ + 40 \\ \hline 69 \end{array}$ $\begin{array}{r} 26 \\ + 40 \\ \hline 69 \end{array}$ $\begin{array}{r} 26 \\ + 43 \\ \hline 69 \end{array}$	B $\begin{array}{r} 50 \\ + 30 \\ \hline 80 \end{array}$ $\begin{array}{r} 50 \\ + 30 \\ \hline 84 \end{array}$ $\begin{array}{r} 50 \\ + 2 \\ \hline 86 \end{array}$ $\begin{array}{r} 54 \\ + 2 \\ \hline 86 \end{array}$ $\begin{array}{r} 54 \\ + 32 \\ \hline 86 \end{array}$
C $\begin{array}{r} 30 \\ + 10 \\ \hline 40 \end{array}$ $\begin{array}{r} 30 \\ + 10 \\ \hline 45 \end{array}$ $\begin{array}{r} 30 \\ + 1 \\ \hline 46 \end{array}$ $\begin{array}{r} 35 \\ + 1 \\ \hline 46 \end{array}$ $\begin{array}{r} 35 \\ + 11 \\ \hline 46 \end{array}$	D $\begin{array}{r} 60 \\ + 20 \\ \hline 80 \end{array}$ $\begin{array}{r} 60 \\ + 20 \\ \hline 87 \end{array}$ $\begin{array}{r} 60 \\ + 2 \\ \hline 89 \end{array}$ $\begin{array}{r} 67 \\ + 2 \\ \hline 89 \end{array}$ $\begin{array}{r} 67 \\ + 22 \\ \hline 89 \end{array}$

2. Find the sums as in the example.

Example: $\begin{array}{r} 27 \\ + 56 \\ \hline 13 \\ + 70 \\ \hline 83 \end{array}$	A $\begin{array}{r} 43 \\ + 29 \\ \hline 12 \\ 60 \\ \hline 72 \end{array}$	B $\begin{array}{r} 66 \\ + 28 \\ \hline 14 \\ 80 \\ \hline 94 \end{array}$	C $\begin{array}{r} 59 \\ + 34 \\ \hline 13 \\ 80 \\ \hline 93 \end{array}$	D $\begin{array}{r} 65 \\ + 29 \\ \hline 14 \\ 80 \\ \hline 94 \end{array}$
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3. Study each picture and give the missing sums.



4. Find the sums.

A $\begin{array}{r} 56 \\ + 43 \\ \hline 99 \end{array}$	B $\begin{array}{r} 38 \\ + 64 \\ \hline 102 \end{array}$	C $\begin{array}{r} 49 \\ + 56 \\ \hline 105 \end{array}$	D $\begin{array}{r} 78 \\ + 95 \\ \hline 173 \end{array}$	E $\begin{array}{r} 64 \\ + 27 \\ \hline 91 \end{array}$	F $\begin{array}{r} 56 \\ + 18 \\ \hline 74 \end{array}$
G $\begin{array}{r} 79 \\ + 56 \\ \hline 135 \end{array}$	H $\begin{array}{r} 98 \\ + 71 \\ \hline 169 \end{array}$	I $\begin{array}{r} 64 \\ + 83 \\ \hline 147 \end{array}$	J $\begin{array}{r} 39 \\ + 64 \\ \hline 103 \end{array}$	K $\begin{array}{r} 58 \\ + 79 \\ \hline 137 \end{array}$	L $\begin{array}{r} 67 \\ + 84 \\ \hline 151 \end{array}$

1. Find the sums.

A	$\begin{array}{r} 6 \\ 2 \\ 8 \\ + 4 \\ \hline 20 \end{array}$	B	$\begin{array}{r} 9 \\ 2 \\ 3 \\ + 4 \\ \hline 18 \end{array}$	C	$\begin{array}{r} 7 \\ 2 \\ 1 \\ + 6 \\ \hline 16 \end{array}$	D	$\begin{array}{r} 5 \\ 4 \\ 2 \\ + 3 \\ \hline 14 \end{array}$	E	$\begin{array}{r} 7 \\ 2 \\ 6 \\ + 1 \\ \hline 16 \end{array}$	F	$\begin{array}{r} 5 \\ 2 \\ 3 \\ + 4 \\ \hline 14 \end{array}$	G	$\begin{array}{r} 7 \\ 8 \\ 4 \\ + 1 \\ \hline 20 \end{array}$	H	$\begin{array}{r} 6 \\ 2 \\ 4 \\ + 3 \\ \hline 15 \end{array}$	I	$\begin{array}{r} 7 \\ 1 \\ 2 \\ + 3 \\ \hline 13 \end{array}$
----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--	----------	--

J $8 + 6 + 2 = \underline{16}$

R $9 + 6 + 3 = \underline{18}$

K $9 + 1 + 5 = \underline{15}$

S $7 + 5 + 8 = \underline{20}$

L $6 + 2 + 8 = \underline{16}$

T $9 + 3 + 6 + 2 = \underline{20}$

M $5 + 6 + 5 = \underline{16}$

U $7 + 6 + 3 + 4 = \underline{20}$

N $7 + 2 + 1 = \underline{10}$

V $9 + 2 + 1 + 8 = \underline{20}$

O $8 + 3 + 4 = \underline{15}$

W $7 + 3 + 9 + 9 = \underline{28}$

P $7 + 1 + 6 = \underline{14}$

X $8 + 3 + 2 + 5 = \underline{18}$

Q $3 + 8 + 4 = \underline{15}$

Y $8 + 2 + 8 + 4 = \underline{22}$

2. Complete each magic square.

A

6	7	2
1	5	9
8	3	4

B

10	6	5
2	7	12
9	8	4

C

3	2	7
8	4	0
1	6	5

3. Short stories.

A 6 robins. 8 sparrows.
How many birds? 14

D Rained 4 days. Sunny 9 days.
How many days? 13

B 9 boys. 8 girls.
How many children? 17

E 6 drums. 9 bugles.
How many instruments? 15

C 2 weeks.
How many days? 14

F Stayed 9 days. Then stayed 1 more week. Stayed how long in all? 16 days

1. Find the sums.

A
$$\begin{array}{r} 8 \\ + 7 \\ \hline 15 \end{array} \rightarrow \begin{array}{r} 68 \\ + 57 \\ \hline 125 \end{array} \rightarrow \begin{array}{r} 468 \\ + 957 \\ \hline 1425 \end{array} \rightarrow \begin{array}{r} 7468 \\ + 5957 \\ \hline 13425 \end{array} \rightarrow \begin{array}{r} 37468 \\ + 85957 \\ \hline 123425 \end{array}$$

B
$$\begin{array}{r} 9 \\ + 6 \\ \hline 15 \end{array} \rightarrow \begin{array}{r} 59 \\ + 76 \\ \hline 135 \end{array} \rightarrow \begin{array}{r} 459 \\ + 676 \\ \hline 1135 \end{array} \rightarrow \begin{array}{r} 8459 \\ + 9676 \\ \hline 18135 \end{array} \rightarrow \begin{array}{r} 58459 \\ + 79676 \\ \hline 138135 \end{array}$$

C
$$\begin{array}{r} 8 \\ + 5 \\ \hline 13 \end{array} \rightarrow \begin{array}{r} 38 \\ + 45 \\ \hline 83 \end{array} \rightarrow \begin{array}{r} 938 \\ + 645 \\ \hline 1583 \end{array} \rightarrow \begin{array}{r} 7938 \\ + 6645 \\ \hline 14583 \end{array} \rightarrow \begin{array}{r} 97938 \\ + 46645 \\ \hline 144583 \end{array}$$

2. Find the sums.

A
$$\begin{array}{r} 607 \\ + 834 \\ \hline 1441 \end{array}$$
 B
$$\begin{array}{r} 964 \\ + 289 \\ \hline 1253 \end{array}$$
 C
$$\begin{array}{r} 7462 \\ + 9317 \\ \hline 16779 \end{array}$$
 D
$$\begin{array}{r} 8652 \\ + 9064 \\ \hline 17716 \end{array}$$
 E
$$\begin{array}{r} 98463 \\ + 72169 \\ \hline 170632 \end{array}$$

F
$$\begin{array}{r} 286 \\ 430 \\ + 927 \\ \hline 1643 \end{array}$$
 G
$$\begin{array}{r} 651 \\ 287 \\ + 965 \\ \hline 1903 \end{array}$$
 H
$$\begin{array}{r} 7364 \\ 8091 \\ + 7436 \\ \hline 22891 \end{array}$$
 I
$$\begin{array}{r} 7064 \\ 9391 \\ + 8405 \\ \hline 24860 \end{array}$$
 J
$$\begin{array}{r} 67283 \\ 90726 \\ + 54391 \\ \hline 212400 \end{array}$$

K
$$\begin{array}{r} 643 \\ 728 \\ + 569 \\ \hline 1940 \end{array}$$
 L
$$\begin{array}{r} 758 \\ 304 \\ + 619 \\ \hline 1681 \end{array}$$
 M
$$\begin{array}{r} 7268 \\ 473 \\ 5860 \\ + 29 \\ \hline 13630 \end{array}$$
 N
$$\begin{array}{r} 9642 \\ 17 \\ 8406 \\ + 927 \\ \hline 18992 \end{array}$$
 O
$$\begin{array}{r} 36280 \\ 4076 \\ 91824 \\ + 698 \\ \hline 132878 \end{array}$$

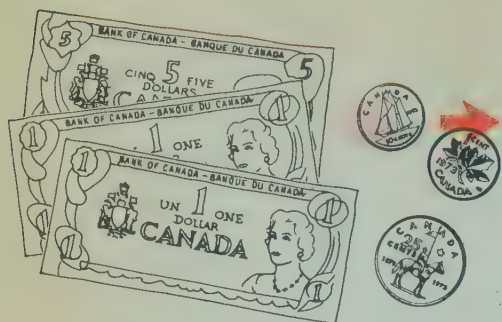
CHANGE OF PACE

A code and an addition exercise are given. See if you can solve the code. Each letter stands for a digit. For example, C stands for the digit 8.

Code: A = 3 B = 7
C = 8 D = 2 E = 9

$$\begin{array}{r} CDC8 \\ + AEB \\ \hline BDBE \end{array}$$

Clue: Could B stand for more than 1?



We say: "Seven dollars and thirty-six cents."

We write: \$ 7 . 36

The period separates dollars from cents.

1. Give the total amounts.

A Since $\begin{array}{r} 276 \\ +341 \\ \hline 617 \end{array}$, we know that $\begin{array}{r} \$2.76 \\ +\$3.41 \\ \hline \$6.17 \end{array}$.

B Since $\begin{array}{r} 507 \\ 628 \\ +236 \\ \hline 1371 \end{array}$, we know that $\begin{array}{r} \$5.07 \\ 6.28 \\ +2.36 \\ \hline \$13.71 \end{array}$.

2. Find the total amounts.

A $\begin{array}{r} \$18.55 \\ +1.34 \\ \hline \$19.89 \end{array}$

B $\begin{array}{r} \$25.19 \\ +32.44 \\ \hline \$57.63 \end{array}$

C $\begin{array}{r} \$8.45 \\ +9.67 \\ \hline \$18.12 \end{array}$

D $\begin{array}{r} \$52.14 \\ +54.56 \\ \hline \$106.70 \end{array}$

E $\begin{array}{r} \$1.79 \\ +5.68 \\ \hline \$7.47 \end{array}$

F $\begin{array}{r} \$39.37 \\ +24.77 \\ \hline \$64.14 \end{array}$

G $\begin{array}{r} \$25.89 \\ +10.29 \\ \hline \$36.18 \end{array}$

H $\begin{array}{r} \$3.97 \\ +0.65 \\ \hline \$4.62 \end{array}$

I $\begin{array}{r} \$129.35 \\ +374.87 \\ \hline \$504.22 \end{array}$

J $\begin{array}{r} \$2749.50 \\ +5277.77 \\ \hline \$8027.27 \end{array}$

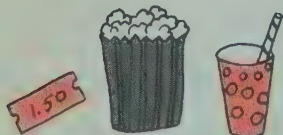
3. Short stories.

- A Had \$5.39.
Earned \$2.70 more.

How much in all? \$8.09

- C Had \$23.65 in a savings account.
Put in \$7.86 more.

How much in savings now? \$31.51

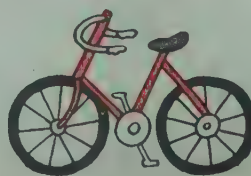


- B Movie ticket \$1.50
Popcorn 0.35
Soda 0.35

How much in all? \$2.20

- D A bike costs \$59.98.
A basket costs \$3.49.
Tax is \$1.94.

How much in all? \$65.41



1. Give the missing numbers in each equation.

Think
 $63 = 50 + \underline{13}$

$$\begin{array}{r} 5 \ 13 \\ 63 \\ - 27 \\ \hline \end{array}$$



Think
 $13 - 7 = \underline{6}$

$$\begin{array}{r} 5 \ 13 \\ 63 \\ - 27 \\ \hline 6 \end{array}$$



Think
 $5 - 2 = \underline{3}$

$$\begin{array}{r} 5 \ 13 \\ 63 \\ - 27 \\ \hline 36 \end{array}$$

2. Find the differences.

A $\begin{array}{r} 61 \\ - 44 \\ \hline 17 \end{array}$

B $\begin{array}{r} 72 \\ - 29 \\ \hline 43 \end{array}$

C $\begin{array}{r} 84 \\ - 56 \\ \hline 28 \end{array}$

D $\begin{array}{r} 30 \\ - 19 \\ \hline 11 \end{array}$

E $\begin{array}{r} 92 \\ - 65 \\ \hline 27 \end{array}$

F $\begin{array}{r} 73 \\ - 27 \\ \hline 46 \end{array}$

G $\begin{array}{r} 67 \\ - 38 \\ \hline 29 \end{array}$

3. Study the steps and give the missing numbers in the equations.

Think
 I can't subtract
 7 from 5.

$$\begin{array}{r} 935 \\ - 287 \\ \hline \end{array}$$

Think
 $35 = 20 + \underline{15}$

$$\begin{array}{r} 935 \\ - 287 \\ \hline \end{array}$$

Think
 $15 - 7 = \underline{8}$

$$\begin{array}{r} 935 \\ - 287 \\ \hline 8 \end{array}$$

Think
 $92 = 80 + \underline{12}$

$$\begin{array}{r} 935 \\ - 287 \\ \hline 8 \end{array}$$

Think
 $12 - 8 = \underline{4}$

$$\begin{array}{r} 935 \\ - 287 \\ \hline 48 \end{array}$$

Think
 $8 - 2 = \underline{6}$

$$\begin{array}{r} 935 \\ - 287 \\ \hline 48 \end{array}$$

4. Find the differences.

A $\begin{array}{r} 146 \\ - 81 \\ \hline 65 \end{array}$

B $\begin{array}{r} 153 \\ - 67 \\ \hline 86 \end{array}$

C $\begin{array}{r} 961 \\ - 268 \\ \hline 693 \end{array}$

D $\begin{array}{r} 435 \\ - 174 \\ \hline 261 \end{array}$

E $\begin{array}{r} 267 \\ - 158 \\ \hline 109 \end{array}$

F $\begin{array}{r} 817 \\ - 734 \\ \hline 83 \end{array}$

G $\begin{array}{r} 2934 \\ - 1561 \\ \hline 1373 \end{array}$

H $\begin{array}{r} 8153 \\ - 4832 \\ \hline 3321 \end{array}$

I $\begin{array}{r} 7812 \\ - 3728 \\ \hline 4084 \end{array}$

J $\begin{array}{r} 76432 \\ - 32766 \\ \hline 43666 \end{array}$

1. Study the examples. Then give the missing numbers for each exercise.

Examples: $802 = 80 \text{ tens} + 2$ or $79 \text{ tens} + 12$
 $7005 = 700 \text{ tens} + 5$ or $699 \text{ tens} + 15$
 $6043 = 60 \text{ hundreds} + 43$ or $59 \text{ hundreds} + 143$

A $702 = \underline{70} \text{ tens} + 2$ or $69 \text{ tens} + \underline{12}$
 B $508 = 50 \text{ tens} + \underline{8}$ or $\underline{49} \text{ tens} + 18$
 C $900 = \underline{90} \text{ tens} + 0$ or $\underline{89} \text{ tens} + 10$
 D $1308 = 130 \text{ tens} + \underline{8}$ or $129 \text{ tens} + \underline{18}$
 E $6004 = \underline{600} \text{ tens} + 4$ or $\underline{599} \text{ tens} + 14$
 F $7004 = 700 \text{ tens} + \underline{4}$ or $\underline{699} \text{ tens} + 14$
 G $8026 = \underline{80} \text{ hundreds} + 26$ or $\underline{79} \text{ hundreds} + 126$
 H $2035 = 20 \text{ hundreds} + \underline{35}$ or $\underline{19} \text{ hundreds} + 135$
 I $7060 = \underline{70} \text{ hundreds} + 60$ or $\underline{69} \text{ hundreds} + 160$
 J $5037 = 50 \text{ hundreds} + \underline{37}$ or $\underline{49} \text{ hundreds} + 137$

2. Give each missing number as in the example.

Example: $\begin{array}{r} 69 \text{ } 13 \\ 703 \\ \hline \end{array}$ A $\begin{array}{r} 39 \text{ } 12 \\ 402 \\ \hline \end{array}$ B $\begin{array}{r} 59 \text{ } 15 \\ 605 \\ \hline \end{array}$ C $\begin{array}{r} 899 \text{ } 12 \\ 9002 \\ \hline \end{array}$ D $\begin{array}{r} 799 \text{ } 14 \\ 8004 \\ \hline \end{array}$
 E $\begin{array}{r} 59 \text{ } 11 \\ 601 \\ \hline \end{array}$ F $\begin{array}{r} 19 \text{ } 10 \\ 200 \\ \hline \end{array}$ G $\begin{array}{r} 699 \text{ } 11 \\ 7001 \\ \hline \end{array}$ H $\begin{array}{r} 69 \text{ } 16 \\ 7062 \\ \hline \end{array}$ I $\begin{array}{r} 39 \text{ } 13 \\ 4032 \\ \hline \end{array}$

3. Find the differences.

A $\begin{array}{r} 203 \\ -156 \\ \hline 47 \end{array}$	B $\begin{array}{r} 406 \\ -158 \\ \hline 248 \end{array}$	C $\begin{array}{r} 702 \\ -135 \\ \hline 567 \end{array}$	D $\begin{array}{r} 900 \\ -246 \\ \hline 654 \end{array}$	E $\begin{array}{r} 600 \\ -338 \\ \hline 262 \end{array}$
F $\begin{array}{r} 504 \\ -257 \\ \hline 247 \end{array}$	G $\begin{array}{r} 200 \\ -144 \\ \hline 56 \end{array}$	H $\begin{array}{r} 8032 \\ -3471 \\ \hline 4561 \end{array}$	I $\begin{array}{r} 9046 \\ -2869 \\ \hline 6177 \end{array}$	J $\begin{array}{r} 7005 \\ -5432 \\ \hline 1573 \end{array}$
K $\begin{array}{r} 8002 \\ -6444 \\ \hline 1558 \end{array}$	L $\begin{array}{r} 7102 \\ -4325 \\ \hline 2777 \end{array}$	M $\begin{array}{r} 8304 \\ -4687 \\ \hline 3617 \end{array}$	N $\begin{array}{r} 5074 \\ -1683 \\ \hline 3391 \end{array}$	O $\begin{array}{r} 6200 \\ -2784 \\ \hline 3416 \end{array}$

1. Give the total distance for each trip.

- A Vancouver to Toronto to Montreal 5136 km
- B Montreal to Halifax to Victoria 7692 km
- C Victoria to Montreal to Toronto 5552 km
- D Ottawa to Calgary to Regina 4249 km
- E Winnipeg to Ottawa to Toronto 2599 km

Touring Distances (Kilometres)	
Vancouver to Toronto	4580
Toronto to Montreal	556
Montreal to Halifax	1348
Halifax to Victoria	6344
Victoria to Montreal	4996
Winnipeg to Ottawa	2173
Ottawa to Calgary	3496
Calgary to Regina	753
Toronto to Ottawa	426

2. Tell how much farther the first trip is than the second.

- A Toronto to Montreal; Toronto to Ottawa 130 km
- B Victoria to Halifax; Victoria to Montreal 1348 km
- C Calgary to Regina; Montreal to Toronto 197 km
- D Winnipeg to Ottawa; Vancouver to Toronto 2407 km

3. Which is farther, Toronto to Ottawa or

Ottawa to Winnipeg? Ottawa to Winnipeg

How much further? 1747 km

4. It is 6344 kilometres from Victoria to Halifax.
How much further is it if you stop in Montreal on the way
from Victoria to Halifax? 0 km

5. It costs \$48.50 to fly from Toronto to Montreal.
It costs \$64.50 to fly from Toronto to Victoria.

How much more does it cost to fly from Toronto to Victoria? \$16.00

1. Solve the equations.

A $9 + 6 = \underline{15}$

B $7 + \underline{5} = 12$

C $13 - 7 = \underline{6}$

D $12 - 5 = \underline{7}$

E $\underline{5} + 8 = 13$

F $17 - \underline{8} = 9$

2. Solve the equations.

A $47 = 30 + \underline{17}$

B $78 = 60 + \underline{18}$

C $70 = 60 + \underline{10}$

3. Find the differences.

Since $27 + 85 = 112$, we know that $\begin{cases} 112 - 85 = \underline{27} \\ 112 - 27 = \underline{85} \end{cases}$

4. Solve the equations.

A $68 + \underline{23} = 23 + 68$

B $17 + (68 + 95) = (17 + \underline{68}) + 95$

5. Find the sums and differences.

A $\begin{array}{r} 37 \\ + 69 \\ \hline 106 \end{array}$

B $\begin{array}{r} 53 \\ - 26 \\ \hline 27 \end{array}$

C $\begin{array}{r} 89 \\ + 58 \\ \hline 147 \end{array}$

D $\begin{array}{r} 174 \\ - 86 \\ \hline 88 \end{array}$

E $\begin{array}{r} \$5.28 \\ + 6.94 \\ \hline \$12.22 \end{array}$

F $\begin{array}{r} \$7.06 \\ - 1.58 \\ \hline \$5.48 \end{array}$

G $26 + 347 + 9 = \underline{382}$

H $4603 - 2776 = \underline{1827}$

6. Jack bought a bat for \$1.75, a ball for \$2.39, and a glove for \$10.95. How much did he spend in all? \$15.09

CHANGE OF PACE

We can use a letter and a number to locate each point on the map. For example, E-3 gives the location of Pinebluff. Give the location of the other cities.

1. Fairview C-5

4. Oakgrove F-8

2. Bluelake I-2

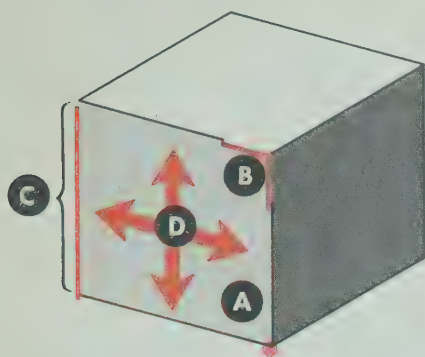
5. Hilltop H-6

3. Cedar Junction D-1

6. Sandcreek B-8



1. Write the name of the part of the cube (edge, face, right angle, or vertex) in the blanks below.



- A vertex
 B right angle
 C edge
 D face

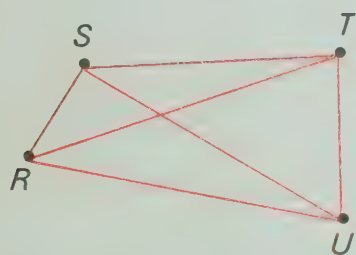
2. Use points A and B to draw \overline{AB} .



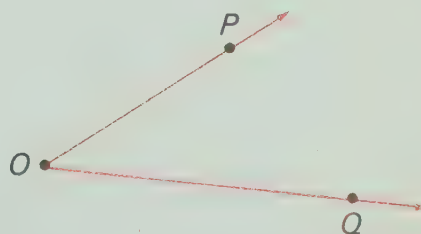
3. Use points M and N to draw \overleftrightarrow{MN} .



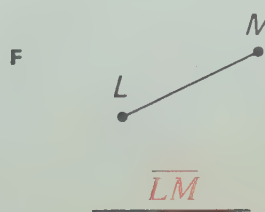
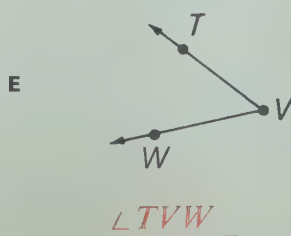
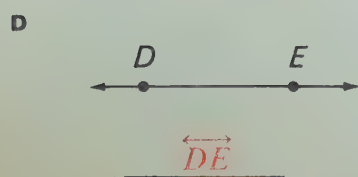
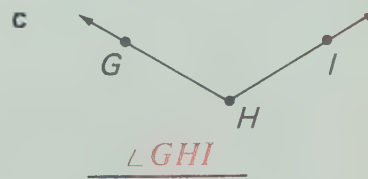
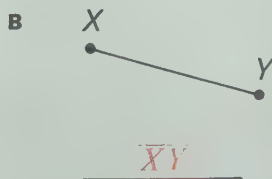
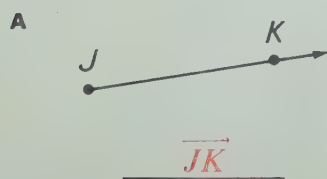
4. Draw as many segments as you can connecting points R , S , T , and U .



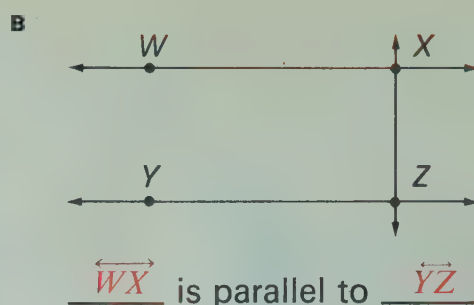
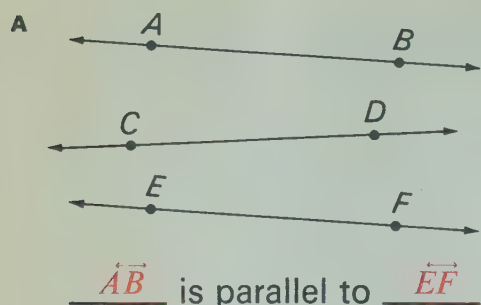
5. Use points O , P , Q , to draw $\angle POQ$.



6. Write the name of each figure using the proper letters and symbols.

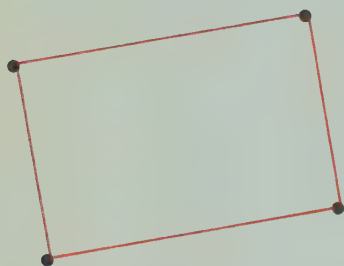


1. Name the lines that are parallel to each other.

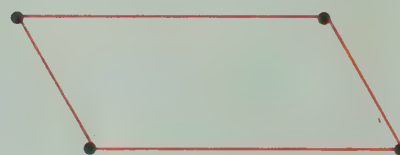


2. Use the points shown to draw the figures named in each part.

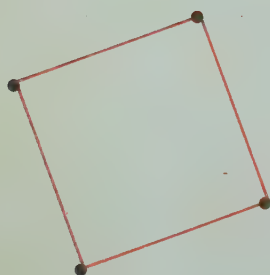
A Rectangle



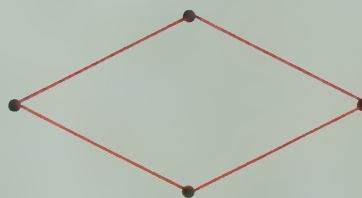
B Parallelogram



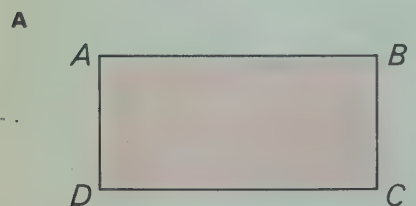
C Square



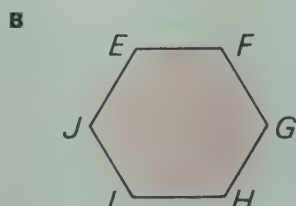
D Rhombus



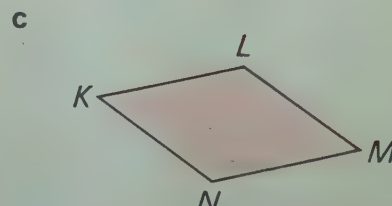
3. Name the pairs of parallel segments for each figure below.



\overline{AB} is parallel to \overline{DC}
 \overline{AD} is parallel to \overline{BC}

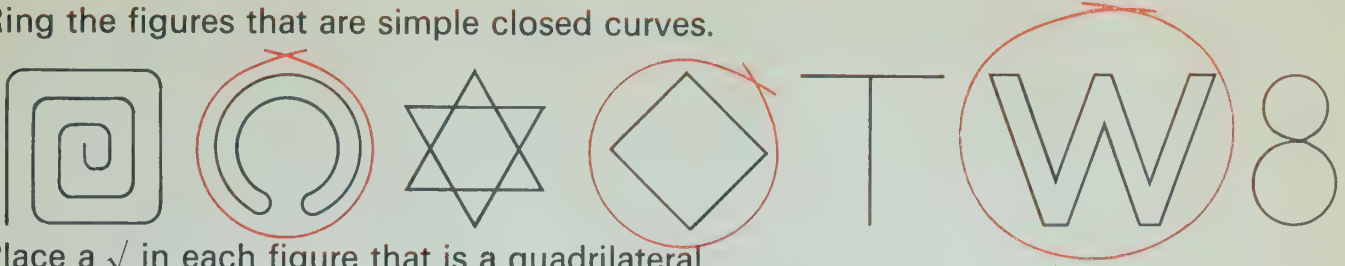


\overline{EF} is parallel to \overline{IH}
 \overline{FG} is parallel to \overline{JI}
 \overline{GH} is parallel to \overline{EJ}

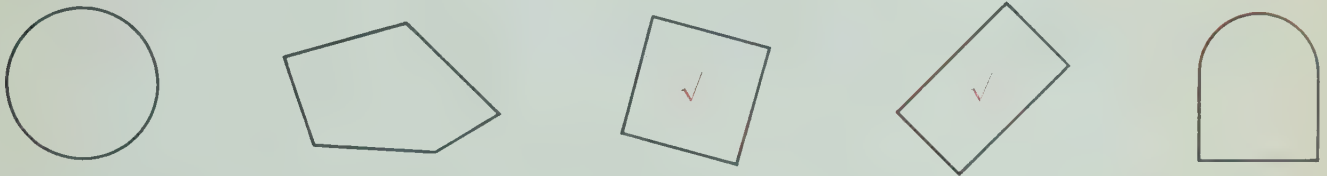


\overline{KL} is parallel to \overline{NM}
 \overline{LM} is parallel to \overline{KN}


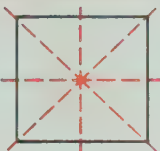
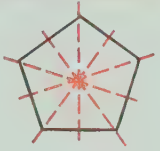
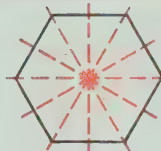
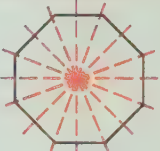
1. Ring the figures that are simple closed curves.



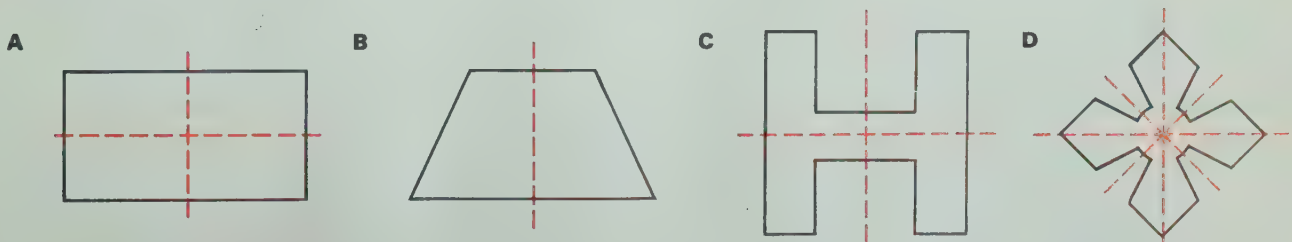
2. Place a \checkmark in each figure that is a quadrilateral.



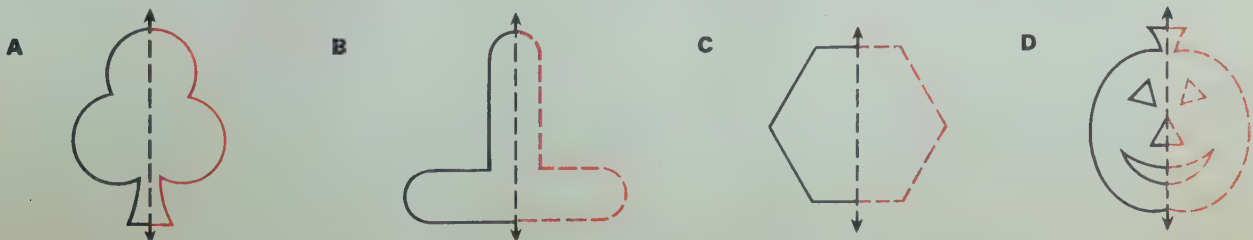
3. Draw as many lines of symmetry as you can for each figure.
Then complete parts **A** and **B** of the table.

REGULAR POLYGONS						
						
	Triangle	Square	Pentagon	Hexagon	Octagon	
A	Number of sides	3	4	5	6	8
B	Lines of symmetry	3	4	5	6	8

4. Draw as many lines of symmetry as you can for each figure.



5. Complete the drawing so that the dashed line will be a line of symmetry.

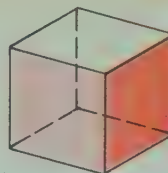


1. Refer to the cube at the right to answer the questions.

A How many faces? 6

B How many vertices? 8

C How many edges? 12



2. Choose the correct word from the list at the left that best describes the figure or a part of a figure shown in color.

angle

parallel

segments

pyramid

quadrilateral

ray

segment

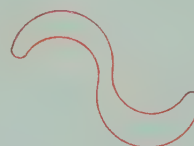
simple closed
curve

symmetric
figure

vertex



A parallel segments



B simple closed curve



C quadrilateral



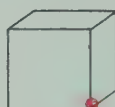
D symmetric figure



E angle



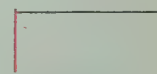
F pyramid



G vertex



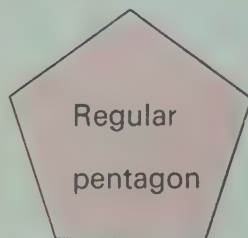
H ray



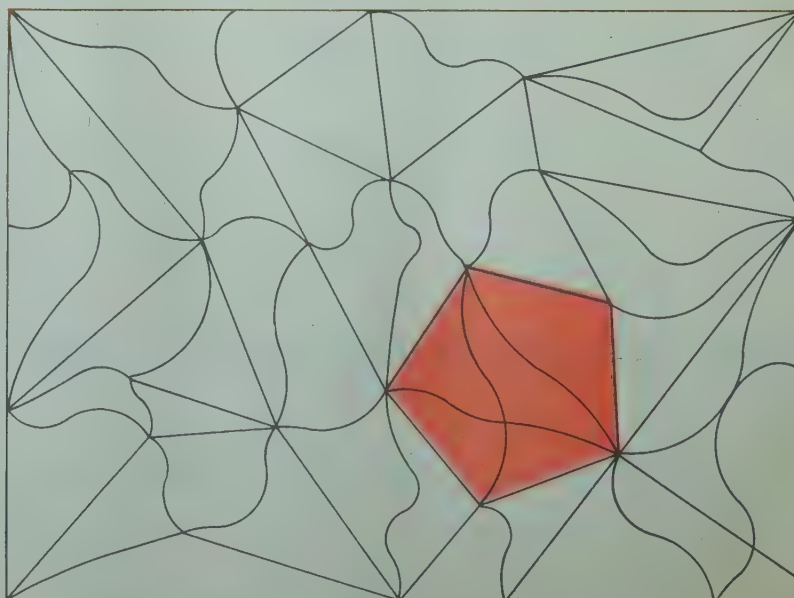
I segment

CHANGE OF PACE

A regular pentagon is hidden in the figure.



Find the pentagon and color it.



1. Give the missing numbers. Then solve the equations.



3 sets of 4

$$3 \times 4 = \boxed{12}$$

$$\boxed{12} \div 3 = 4$$

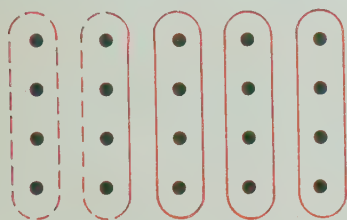


6 sets of 3

$$6 \times 3 = \boxed{18}$$

$$\boxed{18} \div 6 = 3$$

2. Ring as many sets of 4 as you can.

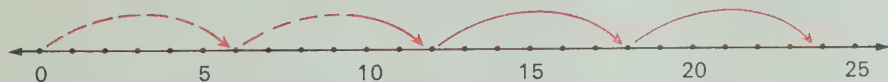


There are 20 dots in all.

There are 5 sets of 4.

$$20 \div 4 = \boxed{5}$$

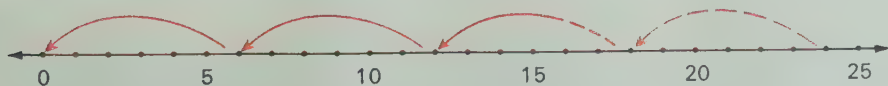
3. Make as many jumps of 6 as you can.



$$6 + 6 + 6 + 6 = \boxed{24}$$

$$4 \times 6 = \boxed{24}$$

4. Make jumps of 6 from 24 to zero.



$$\begin{array}{r} 24 \\ -6 \\ \hline 18 \end{array} \quad \begin{array}{r} 18 \\ -6 \\ \hline 12 \end{array} \quad \begin{array}{r} 12 \\ -6 \\ \hline 6 \end{array} \quad \begin{array}{r} 6 \\ -6 \\ \hline 0 \end{array}$$

6 was subtracted 4 times.

$$24 \div 6 = \boxed{4}$$

1. Study the sets. Then solve the equations.

3 sets of 4
 $3 \times 4 = \boxed{12}$

4 sets of 3
 $4 \times 3 = \boxed{12}$

$3 \times 4 = 4 \times 3$

2. Find the products.

A Since $8 \times 7 = 56$,
 we know that $7 \times 8 = \boxed{56}$.

C Since $5 \times 8 = 40$,
 we know that $8 \times 5 = \boxed{40}$.

B Since $6 \times 9 = 54$,
 we know that $9 \times 6 = \boxed{54}$.

D Since $7 \times 6 = 42$,
 we know that $6 \times 7 = \boxed{42}$.

3. Solve the equations.

A $3 \times 47 = 47 \times \boxed{3}$

C $\boxed{9} \times 38 = 38 \times 9$

E $64 \times 8 = 8 \times \boxed{64}$

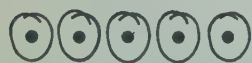
B $56 \times 4 = \boxed{4} \times 56$

D $14 \times \boxed{9} = 9 \times 14$

F $51 \times 7 = \boxed{7} \times 51$

When we change the **order** of the factors,
 we get the same product.

4. Solve the equations.



5 sets of 1



1 set of 5

A $5 \times 1 = \boxed{5}$

B $1 \times 5 = \boxed{5}$

C $7 \times 1 = \boxed{7}$

D $1 \times 8 = \boxed{8}$

E $\boxed{9} \times 1 = 9$

F $1 \times \boxed{6} = 6$

5. Solve the equations.



5 sets of 0

0 sets of 5

A $5 \times 0 = \boxed{0}$

B $0 \times 5 = \boxed{0}$

C $7 \times 0 = \boxed{0}$

D $0 \times 8 = \boxed{0}$

E $9 \times \boxed{0} = 0$

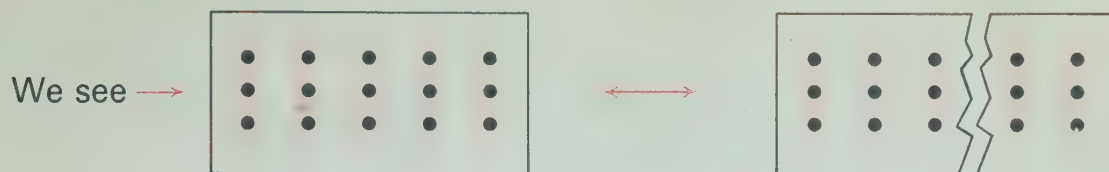
F $\boxed{0} \times 6 = 0$

The product of any number and 1
 is the number itself.

The product of any number and 0
 is 0.

1. Study the sets. Then solve the equations.

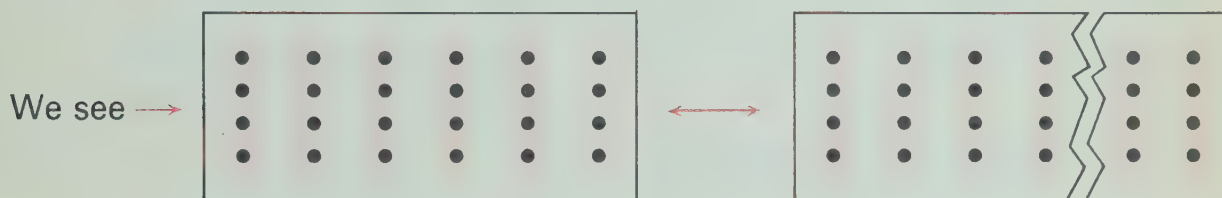
A



We think \rightarrow 5 threes \longleftrightarrow 3 threes and 2 threes

We write \rightarrow $5 \times 3 = \boxed{15}$ \longleftrightarrow $(3 \times 3) + (2 \times 3) = \boxed{15}$

B



We think \rightarrow 6 fours \longleftrightarrow 4 fours and 2 fours

We write \rightarrow $6 \times 4 = \boxed{24}$ \longleftrightarrow $(4 \times 4) + (2 \times 4) = \boxed{24}$

2. Solve the equations.

A $5 \times 3 = (3 \times 3) + (\boxed{2} \times 3)$

G $8 \times 7 = (7 \times 7) + (\boxed{1} \times 7)$

B $6 \times 4 = (\boxed{4} \times 4) + (2 \times 4)$

H $9 \times 3 = (7 \times 3) + (\boxed{2} \times 3)$

C $7 \times 7 = (4 \times 7) + (\boxed{3} \times 7)$

I $8 \times 5 = (\boxed{5} \times 5) + (3 \times 5)$

D $6 \times 7 = (\boxed{3} \times 7) + (3 \times 7)$

J $7 \times 6 = (5 \times 6) + (2 \times \boxed{6})$

E $8 \times 3 = (4 \times 3) + (4 \times \boxed{3})$

K $5 \times 9 = (2 \times \boxed{9}) + (3 \times 9)$

F $5 \times 9 = (2 \times \boxed{9}) + (3 \times 9)$

L $6 \times 8 = (1 \times 8) + (\boxed{5} \times 8)$

3. Solve the equations.

A $\begin{matrix} 3 \times 8 = 24 \\ 2 \times 8 = 16 \end{matrix} \rightarrow 5 \times 8 = \boxed{40}$

B $\begin{matrix} 2 \times 6 = 12 \\ 5 \times 6 = 30 \end{matrix} \rightarrow 7 \times 6 = \boxed{42}$

C $\begin{matrix} 3 \times 7 = 21 \\ 3 \times 7 = 21 \end{matrix} \rightarrow 6 \times 7 = \boxed{42}$

D $\begin{matrix} 4 \times 6 = 24 \\ 3 \times 6 = 18 \end{matrix} \rightarrow 7 \times 6 = \boxed{42}$

1. **"0" facts** The product of any number and zero is zero.

Complete the **0 row** and **column** of the multiplication table on page 35.

2. **"1" facts** The product of any number and 1 is that number.

Complete the **1 row** and **column** of the table.

3. **"2" facts** Solving these equations will help you complete the **2 row** of the table.

- A Since $3 + 3 = 6$,
we know $2 \times 3 = \underline{6}$.
D Since $2 \times 3 = 6$,
we know that $3 \times 2 = \underline{6}$.
B Since $5 + 5 = 10$,
we know $2 \times 5 = \underline{10}$.
E Now use the order principle
to complete the **2 column**.
C Complete the **2 row** of the table.

4. **"3" facts** Solving these equations will help you complete the **3 row** of the table.

- A $(2 \times 5) + 5 = \underline{15} \rightarrow 3 \times 5 = \underline{15}$
B $(2 \times 4) + 4 = \underline{12} \rightarrow 3 \times 4 = \underline{12}$
C $(2 \times 8) + 8 = \underline{24} \rightarrow 3 \times 8 = \underline{24}$
D Complete the **3 row** of the table.
E Use the order principle to complete the **3 column**.

5. **"4" facts** Solving these equations will help you complete the **4 row** of the table.

- A $(2 \times 7) + (2 \times 7) = \underline{28}$
 $4 \times 7 = \underline{28}$
B $(2 \times 9) + (2 \times 9) = \underline{36}$
 $4 \times 9 = \underline{36}$
C Complete the **4 row** of the table.
D Use the order principle to complete the **4 column**.

6. **"5" facts** Solving these equations will help you complete the **5 row** of the table.

- A $(4 \times 6) + 6 = \underline{30} \rightarrow 5 \times 6 = \underline{30}$
B $(4 \times 8) + 8 = \underline{40} \rightarrow 5 \times 8 = \underline{40}$
C $(4 \times 5) + 5 = \underline{25} \rightarrow 5 \times 5 = \underline{25}$
D $(4 \times 7) + 7 = \underline{35} \rightarrow 5 \times 7 = \underline{35}$
E Complete the **5 row** of the table.
F Use the order principle to complete the **5 column**.

1. "6" facts Solve these equations.

Then complete the 6 row and column.

A $(3 \times 8) + (3 \times 8) = \underline{48}$

$6 \times 8 = \underline{48}$

B $(3 \times 7) + (3 \times 7) = \underline{42}$

$6 \times 7 = \underline{42}$

C $(3 \times 6) + (3 \times 6) = \underline{36}$

$6 \times 6 = \underline{36}$

D $(3 \times 9) + (3 \times 9) = \underline{54}$

$6 \times 9 = \underline{54}$

MULTIPLICATION TABLE

	0 col ↓	1 col ↓	2 col ↓	3 col ↓	4 col ↓	5 col ↓	6 col ↓	7 col ↓	8 col ↓	9 col ↓
×	0	1	2	3	4	5	6	7	8	9
0 row →	0	0	0	0	0	0	0	0	0	0
1 row →	1	0	1	2	3	4	5	6	7	8
2 row →	2	0	2	4	6	8	10	12	14	16
3 row →	3	0	3	6	9	12	15	18	21	24
4 row →	4	0	4	8	12	16	20	24	28	32
5 row →	5	0	5	10	15	20	25	30	35	40
6 row →	6	0	6	12	18	24	30	36	42	48
7 row →	7	0	7	14	21	28	35	42	49	56
8 row →	8	0	8	16	24	32	40	48	56	64
9 row →	9	0	9	18	27	36	45	54	63	72

2. "7" facts Solve these equations to help you complete the 7 row of the table.

A $(6 \times 6) + 6 = \underline{42} \rightarrow 7 \times 6 = \underline{42}$

B $(6 \times 7) + 7 = \underline{49} \rightarrow 7 \times 7 = \underline{49}$

C $(6 \times 8) + 8 = \underline{56} \rightarrow 7 \times 8 = \underline{56}$

D $(6 \times 9) + 9 = \underline{63} \rightarrow 7 \times 9 = \underline{63}$

E Use the order principle to complete the 7 column.

3. "8" facts Solve these equations. Then complete the 8 row and column of the table.

A $(4 \times 8) + (4 \times 8) = \underline{64}$

$8 \times 8 = \underline{64}$

B $(4 \times 9) + (4 \times 9) = \underline{72}$

$8 \times 9 = \underline{72}$

4. "9" facts Solve these equations. Then complete the table.

A $(6 \times 9) + (3 \times 9) = \underline{81}$

\rightarrow B $9 \times 9 = \underline{81}$

1. Give the missing numbers.

When you find this **missing factor**,

$$\boxed{7} \times 4 = 28$$

you have found this **quotient**.

$$28 \div 4 = \boxed{7}$$

2. Find each quotient.

Think
 $? \times 3 = 27$

A $27 \div 3 = \boxed{9}$

Think
 $? \times 5 = 40$

B $40 \div 5 = \boxed{8}$

Think
 $? \times 6 = 24$

C $24 \div 6 = \boxed{4}$

Think
 $? \times 7 = 35$

D $35 \div 7 = \boxed{5}$

Think
 $? \times 4 = 32$

E $32 \div 4 = \boxed{8}$

Think
 $? \times 7 = 49$

F $49 \div 7 = \boxed{7}$

3. Find each missing factor and quotient.

A $\boxed{4} \times 4 = 16$
 $16 \div 4 = \boxed{4}$

E $\boxed{8} \times 7 = 56$
 $56 \div 7 = \boxed{8}$

I $\boxed{9} \times 4 = 36$
 $36 \div 4 = \boxed{9}$

B $\boxed{6} \times 5 = 30$
 $30 \div 5 = \boxed{6}$

F $\boxed{2} \times 8 = 16$
 $16 \div 8 = \boxed{2}$

J $\boxed{7} \times 6 = 42$
 $42 \div 6 = \boxed{7}$

C $\boxed{7} \times 5 = 35$
 $35 \div 5 = \boxed{7}$

G $\boxed{7} \times 3 = 21$
 $21 \div 3 = \boxed{7}$

K $\boxed{8} \times 5 = 40$
 $40 \div 5 = \boxed{8}$

D $\boxed{8} \times 4 = 32$
 $32 \div 4 = \boxed{8}$

H $\boxed{4} \times 7 = 28$
 $28 \div 7 = \boxed{4}$

L $\boxed{4} \times 9 = 36$
 $36 \div 9 = \boxed{4}$

1. A Can you find a number that gives 7 when you multiply it by zero? No

$? \times 7 = 0$

$7 \div 0 = \boxed{}$

- B Is it true that any number times zero is zero? yes

$? \times 0 = 0$

$0 \div 0 = \boxed{}$

Since an equation like $7 \div 0 = \boxed{}$ does not have any solution and the equation $0 \div 0 = \boxed{}$ does not have any one solution, **we never divide by zero.**

2. Find each quotient.

A $? \times 0 = 7$

$0 \div 7 = \boxed{0}$

B $? \times 3 = 0$

$0 \div 3 = \boxed{0}$

C $? \times 8 = 0$

$0 \div 8 = \boxed{0}$

Zero divided by any number (other than zero) is zero.

3. Find each quotient.

A $? \times 6 = 6$

$6 \div 6 = \boxed{1}$

B $? \times 1 = 9$

$9 \div 1 = \boxed{9}$

Any number (other than zero) divided by itself is 1.
Any number divided by 1 is that number.

4. Solve the equations.

A $3 \div 3 = \boxed{1}$

D $7 \div 7 = \boxed{1}$

G $0 \div 1 = \boxed{0}$

J $2 \div 2 = \boxed{1}$

B $0 \div 6 = \boxed{0}$

E $9 \div \boxed{9} = 1$

H $1 \div 1 = \boxed{1}$

K $0 \div 3 = \boxed{0}$

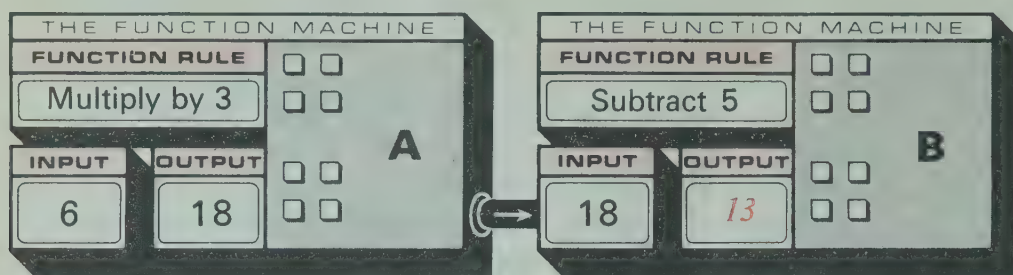
C $8 \div 1 = \boxed{8}$

F $\boxed{0} \div 6 = 0$

I $5 \div \boxed{1} = 5$

L $\boxed{0} \div 8 = 0$

1. The two function machines are connected. The output for machine A becomes the input for machine B. Give the output for machine B.



For exercises 2 through 9, think about connected function machines and give the missing numbers or rules.

2. RULE A: Multiply by 3, B: Add 2. INPUT A OUTPUT B
- | | |
|---|----|
| 2 | 8 |
| 4 | 14 |
| 3 | 11 |
| 5 | 17 |
| 6 | 20 |
3. RULE A: Multiply by 4, B: Divide by 4. INPUT A OUTPUT B
- | | |
|---|---|
| 6 | 6 |
| 9 | 9 |
| 8 | 8 |
| 4 | 4 |
| 7 | 7 |
4. RULE A: Add 7, B: Subtract 5. INPUT A OUTPUT B
- | | |
|---|---|
| 3 | 5 |
| 7 | 9 |
| 0 | 2 |
| 3 | 5 |
| 1 | 3 |
5. RULE A: Multiply by 2, B: Subtract 4. INPUT A OUTPUT B
- | | |
|---|----|
| 6 | 8 |
| 5 | 6 |
| 4 | 4 |
| 7 | 10 |
| 2 | 0 |
6. RULE A: Multiply by 3, B: Add 2. INPUT A OUTPUT B
- | | |
|---|----|
| 4 | 14 |
| 7 | 23 |
| 2 | 8 |
| 3 | 11 |
| 5 | 17 |
7. RULE A: Divide by 2, B: Subtract 3. INPUT A OUTPUT B
- | | |
|----|---|
| 14 | 4 |
| 12 | 3 |
| 20 | 7 |
| 16 | 5 |
| 10 | 2 |
8. RULE A: Add 8, B: Subtract 8. INPUT A OUTPUT B
- | | |
|---|---|
| 7 | 7 |
| 1 | 1 |
| 8 | 8 |
| 0 | 0 |
| 6 | 6 |
9. RULE A: Multiply by 4, B: Subtract 0. INPUT A OUTPUT B
- | | |
|---|----|
| 6 | 24 |
| 7 | 28 |
| 5 | 20 |
| 3 | 12 |
| 9 | 36 |

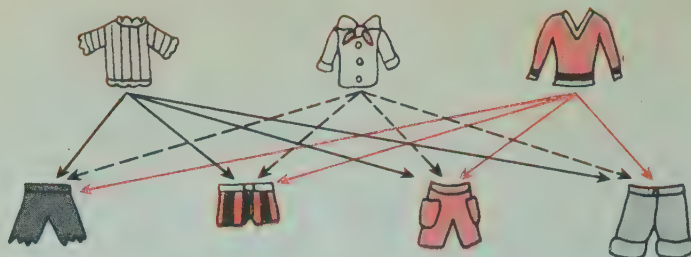
Solve the problem. Then write the correct number in the blank.

1. Lily read 23 pages the first day, 48 pages the second day, and only 19 pages the third day. She read 90 pages in the three days.
2. Ed paid \$4.95 for his tennis shoes and \$1.98 for a cap. The shoes cost \$2.97 more than the cap.
3. Betty had 40 cents worth of nickels. She had 8 nickels.
4. Julie visited her grandmother for 35 days last summer. This was 5 weeks.
5. Frank bought seven 8-cent stamps. The stamps cost him 56 cents.
6. An ice-cube tray has 3 rows of cubes with 8 cubes in each row. The tray holds 24 cubes.
7. A case of soda pop holds 24 bottles. The bottles are in 4 rows. There are 6 bottles in each row.
8. Ann weighs 40 kg; Carmen, 37 kg; Laura, 31 kg; and Emilia, 36 kg.
 - A The four girls weigh 144 kilograms in all.
 - B Carmen weighs 6 kilograms more than Laura.
9. Joe put his coins in stacks of 10. When he finished, he had 7 stacks and 8 left over. He had 78 coins.
10. Wilma has some records that play for 5 minutes each. She can play 9 records in 45 minutes.
11. There are 31 children in Jean's class. 16 of them are girls. There are 15 boys in Jean's class.
12. Kim divided her rock collection equally into 5 boxes. She had 40 rocks. She put 8 rocks into each box.
13. Cherie went swimming 4 times a week for 8 weeks. The last 4 weeks of the summer she went only 3 times a week. She went swimming 44 times during the summer.

1.

3 shirts

4 pairs of shorts



How many different outfits? 12

$$3 \times 4 = \underline{12}$$

2.

5 kinds of ice cream



How many kinds of sundaes? 20

4 kinds of toppings



$$5 \times 4 = \underline{20}$$

3.

4 different drinks



How many different lunches? 16

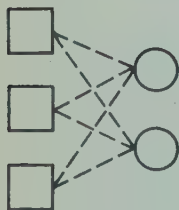
4 different sandwiches



$$4 \times 4 = \underline{16}$$

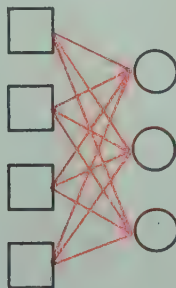
4. Draw lines connecting each square to each circle. Then write a multiplication equation suggested by the pairings.

A



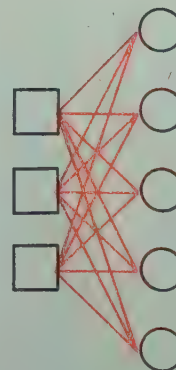
$$\underline{3 \times 2 = 6}$$

B



$$\underline{4 \times 3 = 12}$$

C



$$\underline{3 \times 5 = 15}$$

1. Write a multiplication and a division equation for this set.

$$3 \times 5 = 15$$

$$15 \div 3 = 5$$



2. Solve the equations.

A Since $8 \times 7 = 56$, $56 \div 7 = \boxed{8}$.

C Since $1 \times 7 = 7$, $7 \div 7 = \boxed{1}$.

B Since $0 \times 7 = 0$, $0 \div 7 = \boxed{0}$.

D Since $7 \times 1 = 7$, $7 \div 1 = \boxed{7}$.

3. Solve the equations.

A $6 \times 4 = (\boxed{3} \times 4) + (3 \times 4)$

C $8 \times 2 = (4 \times 2) + (\boxed{4} \times 2)$

B $5 \times 7 = (3 \times 7) + (2 \times \boxed{7})$

D $9 \times 7 = (3 \times \boxed{6}) + (6 \times 6)$

4. Solve the equations.

A $6 \times 7 = \boxed{42}$

B $48 \div 6 = \boxed{8}$

C $28 \div \boxed{4} = 7$

D $5 \times \boxed{7} = 35$

5. Find the quotients.

A $7 \overline{)42} \quad \overset{6}{}$

B $6 \overline{)48} \quad \overset{8}{}$

C $7 \overline{)28} \quad \overset{4}{}$

D $5 \overline{)35} \quad \overset{7}{}$

E $8 \overline{)72} \quad \overset{9}{}$

6. Bought 48 cents worth of 6-cent stamps. How many stamps? 8

CHANGE OF PACE

List the squares that have:

1. A black dot (Answer: ABCDGH IJ)

2. A colored dot DIJMNOP

3. A star CDEFJKL

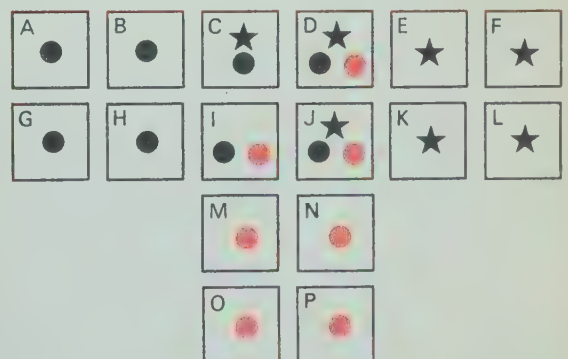
4. A colored dot only MNOP

5. A colored dot but no star IMNOP

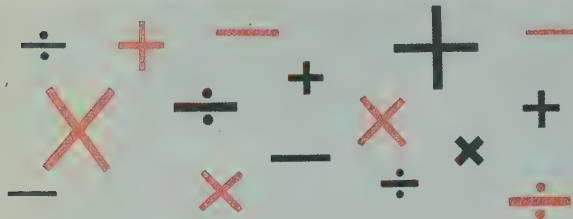
6. Both a black dot and a star CDJ

7. Both a black dot and a star but not a colored dot C

8. A colored and a black dot DIJ



You do not need to give the correct answers to the questions in these problems. Just tell whether you would **add**, **subtract**, **multiply**, or **divide** to find each answer. In exercises 7 through 12, the numbers are covered by screens.



1. Jane had 75 cents. Then she spent 39 cents for a pad of paper. How much did she have left? subtract
2. Drew has 53 cents and John has 67 cents. How much do the two boys have together? add
3. Sue has collected 45 pennies. How many nickels can she get for these pennies? divide
4. Pat pasted 12 stamps on each of 8 pages in his stamp book. How many stamps did he have on these 8 pages? multiply
5. Gloria is 74 months old and Sara is 59 months old. How much older is Gloria than Sara? subtract
6. One April it rained for 21 straight days. How many weeks was this? divide
7. Jim's older brother plans to be at summer camp for █ weeks. How many days is this? multiply
8. Lynn has █ cents and Mike has █ cents.
 - A How much do they have in all? add
 - B How much more does Lynn have than Mike? subtract
9. Mel gave █ baseball cards to █ friends. Each friend got the same number of cards. How many did each friend get? divide
10. Pam spent █ cents on her friends. She bought each of them a soda for █ cents each. How many friends had soda? divide
11. After David earned █ cents he had █ cents. How much did he have before? subtract
12. George is █ years old today. How many months old is George? multiply

6

Special Products and Quotients

● 10, 100, and 1000 as Factors

1. Solve the equations.

A $3 \times 10 = \underline{30}$

D $6 \times 10 = \underline{60}$

G $9 \times \underline{10} = 90$

B $3 \times 100 = \underline{300}$

E $6 \times 100 = \underline{600}$

H $\underline{9} \times 100 = 900$

C $3 \times 1000 = \underline{3000}$

F $6 \times 1000 = \underline{6000}$

I $9 \times 1000 = \underline{9000}$

2. Find the products.

A $4 \times 100 = \underline{400}$

B $7 \times 100 = \underline{700}$

$4 \times (10 \times 10) = \underline{400}$

$7 \times (10 \times 10) = \underline{700}$

$(4 \times 10) \times 10 = \underline{400}$

$(7 \times 10) \times 10 = \underline{700}$

$40 \times 10 = \underline{400}$

$70 \times 10 = \underline{700}$

C $5 \times 1000 = \underline{5000}$

D $9 \times 1000 = \underline{9000}$

$5 \times (10 \times 100) = \underline{5000}$

$9 \times (10 \times 100) = \underline{9000}$

$(5 \times 10) \times 100 = \underline{5000}$

$(9 \times 10) \times 100 = \underline{9000}$

$50 \times 100 = \underline{5000}$

$90 \times 100 = \underline{9000}$

3. Solve the equations.

A $60 \times 10 = \underline{600}$

C $70 \times \underline{10} = 700$

E $90 \times 100 = \underline{9000}$

B $80 \times 10 = \underline{800}$

D $\underline{40} \times 10 = 400$

F $30 \times 100 = \underline{3000}$

4. Find the products.

A $40 \times 10 = \underline{400}$

B $30 \times 100 = \underline{3000}$

C $70 \times 1000 = \underline{70\,000}$

$3 \times 10 = \underline{30}$

$5 \times 100 = \underline{500}$

$6 \times 1000 = \underline{6000}$

$43 \times 10 = \underline{430}$

$35 \times 100 = \underline{3500}$

$76 \times 1000 = \underline{76\,000}$

5. Find the products.

A $8 \times 10 = \underline{80}$

E $97 \times 10 = \underline{970}$

I $56 \times 100 = \underline{5600}$

B $31 \times 10 = \underline{310}$

F $7 \times 100 = \underline{700}$

J $3 \times 1000 = \underline{3000}$

C $18 \times 10 = \underline{180}$

G $44 \times 100 = \underline{4400}$

K $27 \times 1000 = \underline{27\,000}$

D $43 \times 10 = \underline{430}$

H $50 \times 10 = \underline{500}$

L $49 \times 1000 = \underline{49\,000}$

1. Find the first product. Then find the other products.

A Since $4 \times 10 = \underline{40}$, we know that $4 \times 100 = \underline{400}$

B Since $19 \times 10 = \underline{190}$, we know that $19 \times 100 = \underline{1900}$.

C Since $6 \times 10 = \underline{60}$, we know that $6 \times 100 = \underline{600}$ and
 $6 \times 1000 = \underline{6000}$.

D Since $51 \times 10 = \underline{510}$, we know that $51 \times 100 = \underline{5100}$ and
 $51 \times 1000 = \underline{51000}$.

2. Find the products.

A $24 \times 10 = \underline{240}$
 $(4 \times 6) \times 10 = \underline{240}$
 $4 \times (6 \times 10) = \underline{240}$
 $4 \times 60 = \underline{240}$

B $36 \times 10 = \underline{360}$
 $(4 \times 9) \times 10 = \underline{360}$
 $4 \times (9 \times 10) = \underline{360}$
 $4 \times 90 = \underline{360}$

C $35 \times 100 = \underline{3500}$
 $(7 \times 5) \times 100 = \underline{3500}$
 $7 \times (5 \times 100) = \underline{3500}$
 $7 \times 500 = \underline{3500}$

D $21 \times 100 = \underline{2100}$
 $(3 \times 7) \times 100 = \underline{2100}$
 $3 \times (7 \times 100) = \underline{2100}$
 $3 \times 700 = \underline{2100}$

E $32 \times 1000 = \underline{32000}$
 $(8 \times 4) \times 1000 = \underline{32000}$
 $8 \times (4 \times 1000) = \underline{32000}$
 $8 \times 4000 = \underline{32000}$

F $27 \times 1000 = \underline{27000}$
 $(9 \times 3) \times 1000 = \underline{27000}$
 $9 \times (3 \times 1000) = \underline{27000}$
 $9 \times 3000 = \underline{27000}$

3. Find the products.

A $5 \times 3 = \underline{15}$

G $3 \times 40 = \underline{120}$

M $30 \times 8 = \underline{240}$

B $15 \times 10 = \underline{150}$

H $12 \times 100 = \underline{1200}$

N $300 \times 6 = \underline{1800}$

C $5 \times 30 = \underline{150}$

I $4 \times 300 = \underline{1200}$

O $60 \times 90 = \underline{5400}$

D $15 \times 100 = \underline{1500}$

J $3 \times 400 = \underline{1200}$

P $4 \times 700 = \underline{2800}$

E $5 \times 300 = \underline{1500}$

K $30 \times 40 = \underline{1200}$

Q $3 \times 2000 = \underline{6000}$

F $5 \times 3000 = \underline{15000}$

L $12 \times 1000 = \underline{12000}$

R $8000 \times 7 = \underline{56000}$

1. Find the products.

A $7 \times 10 = \underline{70}$

D $6 \times 60 = \underline{360}$

G $4 \times 500 = \underline{2000}$

B $43 \times 10 = \underline{430}$

E $30 \times 7 = \underline{210}$

H $600 \times 9 = \underline{5400}$

C $90 \times 5 = \underline{450}$

F $8 \times 50 = \underline{400}$

I $700 \times 8 = \underline{5600}$

2. Find the missing factors.

A $\boxed{7} \times 2 = 14$

D $\boxed{5} \times 7 = 35$

G $\boxed{60} \times 4 = 240$

B $\boxed{70} \times 2 = 140$

E $\boxed{50} \times 7 = 350$

H $\boxed{700} \times 6 = 4200$

C $\boxed{700} \times 2 = 1400$

F $\boxed{500} \times 7 = 3500$

I $\boxed{800} \times 8 = 6400$

3. Fill in the blanks with as many different pairs of factors as you can.

A  \times  $= 150$

B  \times  $= 270$

$\underline{150} \times \underline{1} = 150$

$\underline{270} \times \underline{1} = 270$

$\underline{15} \times \underline{10} = 150$

$\underline{27} \times \underline{10} = 270$

$\underline{3} \times \underline{50} = 150$

$\underline{3} \times \underline{90} = 270$

$\underline{5} \times \underline{30} = 150$

$\underline{9} \times \underline{30} = 270$

4. Complete the multiplication table.

\times	10	20	30	50	80	100	200	400
3	30	60	90	150	240	300	600	1200
6	60	120	180	300	480	600	1200	2400
9	90	180	270	450	720	900	1800	3600
5	50	100	150	250	400	500	1000	2000

1. Solve the equations. Solving the first equation should help you solve the second one.

A $\boxed{4} \times 3 = 12 \rightarrow \boxed{40} \times 3 = 120$ c $\boxed{5} \times 6 = 30 \rightarrow \boxed{50} \times 6 = 300$
 B $\boxed{7} \times 5 = 35 \rightarrow \boxed{70} \times 5 = 350$ d $\boxed{6} \times 4 = 24 \rightarrow \boxed{60} \times 4 = 240$

2. Solve the equations.

A $\boxed{7} \times 4 = 28$ B $\boxed{7} \times 5 = 35$ c $\boxed{3} \times 7 = 21$
 $\boxed{70} \times 4 = 280$ $\boxed{70} \times 5 = 350$ $\boxed{30} \times 7 = 210$
 $\boxed{7} \times 40 = 280$ $\boxed{7} \times 50 = 350$ $\boxed{3} \times 70 = 210$

3. First find the missing factor. Then find the quotient.

A $\boxed{40} \times 3 = 120$ B $\boxed{20} \times 8 = 160$ c $\boxed{50} \times 4 = 200$
 $120 \div 3 = \boxed{40}$ $160 \div 8 = \boxed{20}$ $200 \div 4 = \boxed{50}$
 D $\boxed{4} \times 40 = 160$ E $\boxed{9} \times 20 = 180$ F $\boxed{5} \times 50 = 250$
 $160 \div 40 = \boxed{4}$ $180 \div 20 = \boxed{9}$ $250 \div 50 = \boxed{5}$
 G $\boxed{300} \times 8 = 2400$ H $\boxed{8} \times 30 = 240$ I $\boxed{500} \times 7 = 3500$
 $2400 \div 8 = \boxed{300}$ $240 \div 30 = \boxed{8}$ $3500 \div 7 = \boxed{500}$

4. Find the quotients.

A $100 \div 2 = \underline{50}$ D $240 \div 30 = \underline{8}$ G $2700 \div 9 = \underline{300}$
 B $120 \div 3 = \underline{40}$ E $160 \div 40 = \underline{4}$ H $4200 \div 6 = \underline{700}$
 c $140 \div 7 = \underline{20}$ F $350 \div 50 = \underline{7}$ I $4000 \div 8 = \underline{500}$

5. Find the quotients.

A $3 \overline{)180} \begin{array}{r} 60 \end{array}$ c $4 \overline{)360} \begin{array}{r} 90 \end{array}$ E $40 \overline{)240} \begin{array}{r} 6 \end{array}$ G $5 \overline{)4500} \begin{array}{r} 900 \end{array}$
 B $5 \overline{)100} \begin{array}{r} 20 \end{array}$ D $8 \overline{)480} \begin{array}{r} 60 \end{array}$ F $70 \overline{)4900} \begin{array}{r} 70 \end{array}$ H $9 \overline{)7200} \begin{array}{r} 800 \end{array}$

1. Find the products.

A $24 \times 100 = \underline{2400}$
 $(4 \times 6) \times 100 = \underline{2400}$
 $(4 \times 6) \times (10 \times 10) = \underline{2400}$
 $(4 \times 10) \times (6 \times 10) = \underline{2400}$
 $40 \times 60 = \underline{2400}$

B $35 \times 100 = \underline{3500}$
 $(5 \times 7) \times 100 = \underline{3500}$
 $(5 \times 7) \times (10 \times 10) = \underline{3500}$
 $(5 \times 10) \times (7 \times 10) = \underline{3500}$
 $50 \times 70 = \underline{3500}$

2. Find the products.

A $30 \times 40 = \underline{1200}$
 B $50 \times 30 = \underline{1500}$
 C $70 \times 20 = \underline{1400}$
 D $80 \times 30 = \underline{2400}$

E $60 \times 50 = \underline{3000}$
 F $40 \times 70 = \underline{2800}$
 G $50 \times 50 = \underline{2500}$
 H $70 \times 30 = \underline{2100}$

I $90 \times 20 = \underline{1800}$
 J $20 \times 80 = \underline{1600}$
 K $30 \times 60 = \underline{1800}$
 L $40 \times 40 = \underline{1600}$

3. Find the missing factor. Then find the quotient.

A $\boxed{70} \times 20 = 1400$
 $1400 \div 20 = \boxed{70}$

B $\boxed{50} \times 50 = 2500$
 $2500 \div 50 = \boxed{50}$

C $\boxed{20} \times 80 = 1600$
 $1600 \div 80 = \boxed{20}$

D $\boxed{60} \times 50 = 3000$
 $3000 \div 50 = \boxed{60}$

E $\boxed{50} \times 30 = 1500$
 $1500 \div 30 = \boxed{50}$

F $\boxed{40} \times 40 = 1600$
 $1600 \div 40 = \boxed{40}$

G $\boxed{40} \times 70 = 2800$
 $2800 \div 70 = \boxed{40}$

H $\boxed{30} \times 40 = 1200$
 $1200 \div 40 = \boxed{30}$

I $\boxed{90} \times 20 = 1800$
 $1800 \div 20 = \boxed{90}$

4. Find the quotients.

A $\begin{array}{r} 90 \\ 10 \overline{) 900} \end{array}$

B $\begin{array}{r} 60 \\ 30 \overline{) 1800} \end{array}$

C $\begin{array}{r} 40 \\ 20 \overline{) 800} \end{array}$

D $\begin{array}{r} 70 \\ 40 \overline{) 2800} \end{array}$

E $\begin{array}{r} 20 \\ 80 \overline{) 1600} \end{array}$

F $\begin{array}{r} 90 \\ 40 \overline{) 3600} \end{array}$

G $\begin{array}{r} 70 \\ 80 \overline{) 5600} \end{array}$

H $\begin{array}{r} 70 \\ 90 \overline{) 6300} \end{array}$

1. Find the products.

A $7 \times 10 = \underline{70}$

D $65 \times 10 = \underline{650}$

G $2 \times 70 = \underline{140}$

B $6 \times 100 = \underline{600}$

E $10 \times 37 = \underline{370}$

H $30 \times 40 = \underline{1200}$

C $23 \times 10 = \underline{230}$

F $60 \times 3 = \underline{180}$

I $60 \times 20 = \underline{1200}$

2. Find the quotients.

A $70 \div 7 = \underline{10}$

D $360 \div 10 = \underline{36}$

G $150 \div 30 = \underline{5}$

B $800 \div 8 = \underline{100}$

E $320 \div 8 = \underline{40}$

H $280 \div 40 = \underline{7}$

C $500 \div 5 = \underline{100}$

F $240 \div 6 = \underline{40}$

I $300 \div 50 = \underline{6}$

3. Find the quotients.

A $6 \overline{) 600} \begin{array}{r} 100 \end{array}$

C $8 \overline{) 240} \begin{array}{r} 30 \end{array}$

E $5 \overline{) 2000} \begin{array}{r} 400 \end{array}$

G $30 \overline{) 2400} \begin{array}{r} 80 \end{array}$

B $4 \overline{) 40} \begin{array}{r} 10 \end{array}$

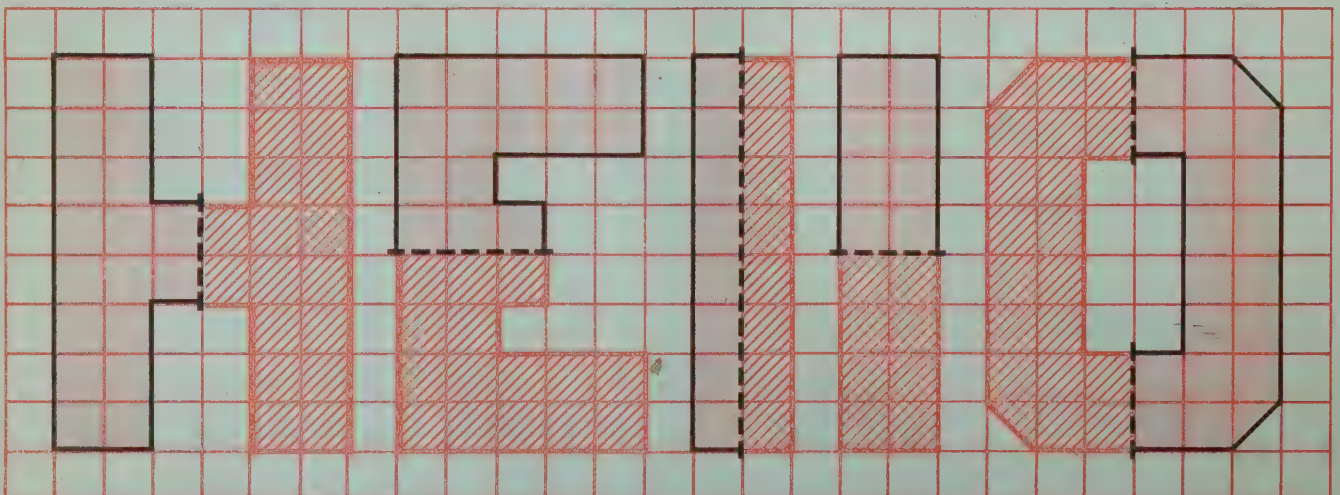
D $2 \overline{) 140} \begin{array}{r} 70 \end{array}$

F $4 \overline{) 1600} \begin{array}{r} 400 \end{array}$

H $20 \overline{) 1200} \begin{array}{r} 60 \end{array}$

CHANGE OF PACE

Draw and color the other half of each figure to form a **symmetric** figure.



1. Answer true (T) or false (F).



- A The number for A is closer to 30 than to 40. T
- B The number for B is closer to 30 than to 40. F
- C The number for C is closer to 50 than to 40. F
- D The number for D is closer to 50 than to 60. F
- E The number for E is closer to 60 than to 70. T

2. Use the closest multiples of 100 to fill in the blanks.



- A The number for A is between 200 and 300.
It is closer to 300 than it is to 200.
- B The number for B is between 300 and 400.
It is closer to 300 than it is to 400.
- C The number for C is closer to 400 than it is to 500.
- D The number for D is closer to 600 than it is to 500.

3. The number shown in color is closer to one of the multiples of 10 or 100 than it is to the other. Put a ring around the one it is closer to.

- | | | |
|-----------------|-------------------|-------------------|
| A (20), 23, 30 | G (80), 83, 90 | M (700), 738, 800 |
| B 40, 47, (50) | H (40), 42, 50 | N (400), 426, 500 |
| C (90), 91, 100 | I 60, 66, (70) | O 800, 888, (900) |
| D 30, 38, (40) | J (100), 123, 200 | P 300, 374, (400) |
| E (50), 52, 60 | K 300, 387, (400) | Q 200, 256, (300) |
| F 70, 76, (80) | L (800), 827, 900 | R (400), 437, 500 |

1. Give an estimate for the sum or difference.

A

Think
 $30 + 60 = 90$

ESTIMATE
this sum.
 $29 + 62$
your
ESTIMATE: 90

B

Think
 $70 + 30 + 60 = 160$

ESTIMATE
THIS SUM.
 $69 + 32 + 58$
your
estimate: 160

C

Think
 $90 - 60 = 30$

Estimate
this difference
 $88 - 59$
your
estimate: 30

2. Give the multiples of 10 or 100 that are closest to the numbers in the problem. Then give an estimate for the sum.

A

$$\begin{array}{r} 39 \rightarrow 40 \\ + 23 \rightarrow 20 \\ \hline \end{array}$$

Estimate $\rightarrow 60$

C

$$\begin{array}{r} 61 \rightarrow 60 \\ + 19 \rightarrow 20 \\ \hline \end{array}$$

Estimate $\rightarrow 80$

E

$$\begin{array}{r} 437 \rightarrow 400 \\ 226 \rightarrow 200 \\ 767 \rightarrow 800 \\ \hline \end{array}$$

Estimate $\rightarrow 1600$

B

$$\begin{array}{r} 51 \rightarrow 50 \\ + 28 \rightarrow 30 \\ \hline \end{array}$$

Estimate $\rightarrow 80$

D

$$\begin{array}{r} 121 \rightarrow 100 \\ + 394 \rightarrow 400 \\ \hline \end{array}$$

Estimate $\rightarrow 500$

3. Give the multiples of 10 or 100 that are closest to the numbers in the problem. Then give an estimate for the difference.

A

$$\begin{array}{r} 72 \rightarrow 70 \\ - 39 \rightarrow 40 \\ \hline \end{array}$$

Estimate $\rightarrow 30$

B

$$\begin{array}{r} 615 \rightarrow 600 \\ - 199 \rightarrow 200 \\ \hline \end{array}$$

Estimate $\rightarrow 400$

C

$$\begin{array}{r} 831 \rightarrow 800 \\ - 196 \rightarrow 200 \\ \hline \end{array}$$

Estimate $\rightarrow 600$

4. Give the closest multiple of 10 or 100 for the sum or difference.

A $43 + 16$ 60

B $79 - 31$ 50

C $379 + 211$ 600

1. Give the multiple of 10 or 100 that is closest to the larger factor.
Then give an estimate for the product.

A $78 \rightarrow 80$
 $\times 6 \rightarrow 6$
 Estimate $\rightarrow 480$

C $39 \rightarrow 40$
 $\times 7 \rightarrow 7$
 Estimate $\rightarrow 280$

E $106 \rightarrow 100$
 $\times 24 \rightarrow 24$
 Estimate $\rightarrow 2400$

B $61 \rightarrow 60$
 $\times 4 \rightarrow 4$
 Estimate $\rightarrow 240$

D $217 \rightarrow 200$
 $\times 9 \rightarrow 9$
 Estimate $\rightarrow 1800$

F $78 \rightarrow 80$
 $\times 39 \rightarrow 40$
 Estimate $\rightarrow 3200$

2. Give an estimate for each product.

A $4 \times 39 \rightarrow 160$

D $4 \times 695 \rightarrow 2800$

G $69 \times 33 \rightarrow 2100$

B $7 \times 21 \rightarrow 140$

E $9 \times 287 \rightarrow 2700$

H $72 \times 19 \rightarrow 1400$

C $3 \times 47 \rightarrow 150$

F $6 \times 304 \rightarrow 1800$

I $58 \times 41 \rightarrow 2400$

3. For each \square , give the multiple of 10 that is closest to each dividend.

Then for each \square , give an estimate for the quotient.

A $6 \overline{) 239}$
 \downarrow
 40
 $6 \overline{) 240}$

B $7 \overline{) 347}$
 \downarrow
 50
 $7 \overline{) 350}$

C $8 \overline{) 163}$
 \downarrow
 20
 $8 \overline{) 160}$

D $4 \overline{) 276}$
 \downarrow
 70
 $4 \overline{) 280}$

4. Put a ring around the best estimate for the quotient.

A $2 \overline{) 78}$ 20, 40, 60

F $7 \overline{) 434}$ 60, 70, 80

B $7 \overline{) 371}$ 10, 50, 500

G $6 \overline{) 318}$ 30, 40, 50

C $6 \overline{) 108}$ 20, 30, 40

H $8 \overline{) 176}$ 10, 20, 30

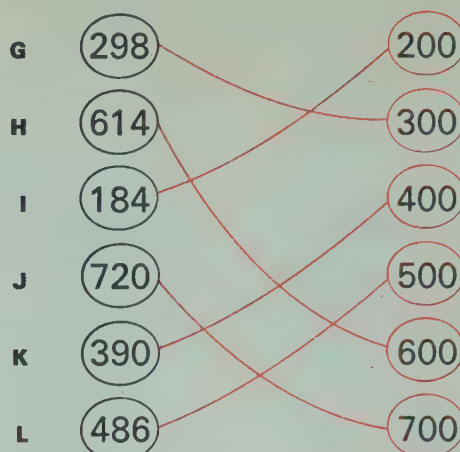
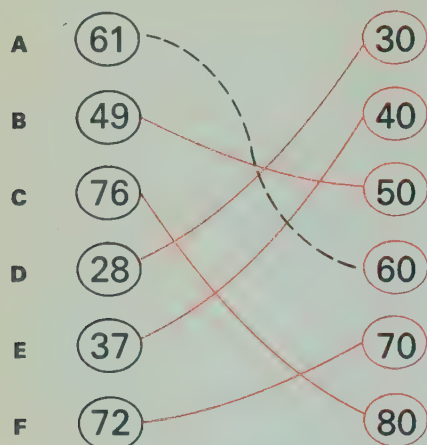
D $8 \overline{) 418}$ 40, 50, 60

I $9 \overline{) 729}$ 70, 80, 90

E $3 \overline{) 297}$ 80, 90, 100

J $3 \overline{) 267}$ 70, 80, 90

1. Match the numbers with the closest multiple of 10 or 100.



2. Estimate the sums, differences, products, and quotients.

A $68 + 13 \underline{80}$

D $602 - 199 \underline{400}$

G $158 \div 2 \underline{80}$

B $198 + 410 \underline{600}$

E $99 \times 3 \underline{300}$

H $255 \div 5 \underline{50}$

C $47 - 29 \underline{20}$

F $398 \times 4 \underline{1600}$

I $357 \div 9 \underline{40}$

CHANGE OF PACE

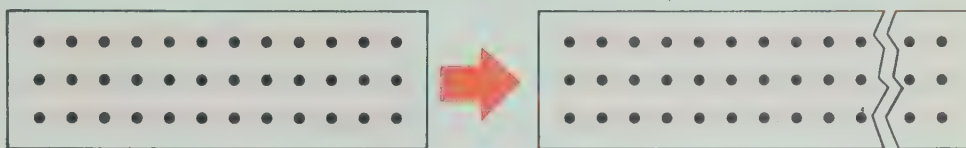
Work the exercises and write your answers in the gray squares. Then use the code to get letters for the colored squares. If you do your work carefully you will have a quotation by Karl Friedrich Gauss, a famous mathematician.

		CODE	
$\begin{array}{r} 25\,941 \\ +12\,476 \\ \hline \end{array}$	\rightarrow 3 8 4 1 7	$0 = H$ $1 = C$ $2 = E$ $3 = A$ $4 = I$ $5 = N$ $6 = Q$ $7 = S$ $8 = T$ $9 = U$	\rightarrow M A T H E M A T I C S
$800 + 2$	\rightarrow 8 0 2		\rightarrow I S T H E
$\begin{array}{r} 71\,661 \\ -2\,436 \\ \hline \end{array}$	\rightarrow 6 9 2 2 5		\rightarrow Q U E E N
$900 - 98$	\rightarrow 8 0 2		\rightarrow O F T H E
$\begin{array}{r} 71\,000\,000 \\ 425\,000 \\ +127 \\ \hline \end{array}$	\rightarrow 7 1 4 2 5 1 2 7		\rightarrow S C I E N C E S

1. Study the sets. Then solve the equations.

You can "break apart" one of the factors when you multiply.

We see:



We think:

3 twelves

3 tens and 3 twos

We write:

$$3 \times 12 = (3 \times 10) + (3 \times 2)$$

2. Solve the equations.

A $4 \times 16 = (4 \times 10) + (4 \times \boxed{6})$

B $8 \times 36 = (8 \times \boxed{30}) + (8 \times 6)$

C $5 \times 23 = (5 \times \boxed{20}) + (5 \times 3)$

D $5 \times 92 = (5 \times 90) + (5 \times \boxed{2})$

3. Find the sums and products.

A $6 \times 20 = \underline{120}$

B $3 \times 40 = \underline{120}$

C $4 \times 60 = \underline{240}$

$6 \times 3 = \underline{18}$

$3 \times 2 = \underline{6}$

$4 \times 3 = \underline{12}$

$6 \times 23 = \underline{138}$

$3 \times 42 = \underline{126}$

$4 \times 63 = \underline{252}$

D $2 \times 30 = \underline{60}$

E $6 \times 50 = \underline{300}$

F $5 \times 70 = \underline{350}$

$2 \times 7 = \underline{14}$

$6 \times 1 = \underline{6}$

$5 \times 4 = \underline{20}$

$2 \times 37 = \underline{74}$

$6 \times 51 = \underline{306}$

$5 \times 74 = \underline{370}$

4. Find the products for each . Then add the products and write the sum in the .

A

×	3
80	240
3	9
83	249

B

×	6
70	420
4	24
74	444

C

×	9
60	540
7	63
67	603

D

×	4
200	800
30	120
8	32
238	952

1. In the picture Sue is finding the product 5×26 by "breaking apart" the 26. Write the correct product in each to show her thinking.

$$5 \times 26 = ?$$



$$5 \times 20 = 100$$

$$5 \times 6 = 30$$

$$5 \times 26 = 130$$

2. Write the correct product in each.

A
$$\begin{array}{r} 72 \\ \times 4 \\ \hline \end{array}$$

$$8 \leftarrow 4 \times 2$$

$$\underline{280} \leftarrow 4 \times 70$$

$$\underline{288} \leftarrow 4 \times 72$$

B
$$\begin{array}{r} 69 \\ \times 5 \\ \hline \end{array}$$

$$45 \leftarrow 5 \times 9$$

$$\underline{300} \leftarrow 5 \times 60$$

$$\underline{345} \leftarrow 5 \times 69$$

C
$$\begin{array}{r} 37 \\ \times 6 \\ \hline \end{array}$$

$$42 \leftarrow 6 \times 7$$

$$\underline{180} \leftarrow 6 \times 30$$

$$\underline{222} \leftarrow 6 \times 37$$

D
$$\begin{array}{r} 98 \\ \times 7 \\ \hline \end{array}$$

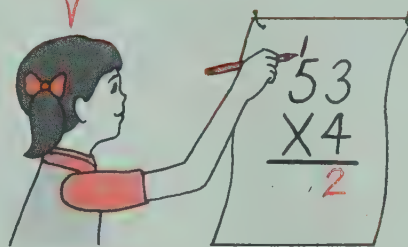
$$56 \leftarrow 7 \times 8$$

$$\underline{630} \leftarrow 7 \times 90$$

$$\underline{686} \leftarrow 7 \times 98$$

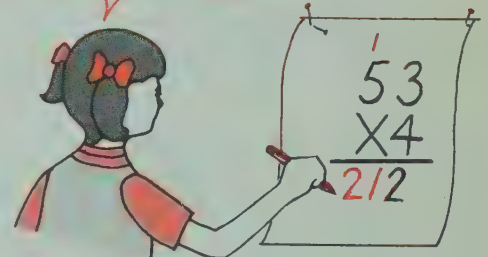
3. Jane is using a shortcut to find the product 53×4 . Write the correct product in each to show her thinking. Then see how she shows her work.

$$4 \times 3 = \underline{12}$$



$$4 \times 5 = \underline{20}$$

$$20 + 1 = \underline{21}$$



4. Find the products.

A
$$\begin{array}{r} 42 \\ \times 6 \\ \hline \end{array}$$

$$252$$

B
$$\begin{array}{r} 83 \\ \times 4 \\ \hline \end{array}$$

$$332$$

C
$$\begin{array}{r} 35 \\ \times 5 \\ \hline \end{array}$$

$$175$$

D
$$\begin{array}{r} 57 \\ \times 3 \\ \hline \end{array}$$

$$171$$

E
$$\begin{array}{r} 46 \\ \times 4 \\ \hline \end{array}$$

$$184$$

F
$$\begin{array}{r} 19 \\ \times 8 \\ \hline \end{array}$$

$$152$$

G
$$\begin{array}{r} 54 \\ \times 7 \\ \hline \end{array}$$

$$378$$

H
$$\begin{array}{r} 71 \\ \times 9 \\ \hline \end{array}$$

$$639$$

I
$$\begin{array}{r} 25 \\ \times 6 \\ \hline \end{array}$$

$$150$$

J
$$\begin{array}{r} 39 \\ \times 5 \\ \hline \end{array}$$

$$195$$

K
$$\begin{array}{r} 80 \\ \times 8 \\ \hline \end{array}$$

$$640$$

L
$$\begin{array}{r} 42 \\ \times 5 \\ \hline \end{array}$$

$$210$$

1. Write the correct product in each

A 835

$\times 4$

20 $\leftarrow 4 \times 5$

120 $\leftarrow 4 \times 30$

3200 $\leftarrow 4 \times 800$

3340 $\leftarrow 4 \times 835$

B 507

$\times 3$

21 $\leftarrow 3 \times 7$

0 $\leftarrow 3 \times 0$

1500 $\leftarrow 3 \times 500$

1521 $\leftarrow 3 \times 507$

C 460

$\times 9$

0 $\leftarrow 9 \times 0$

540 $\leftarrow 9 \times 60$

3600 $\leftarrow 9 \times 400$

4140 $\leftarrow 9 \times 460$

2. A shortcut is used in the problems below. Give the correct digit for each

A $4 \times 8 = 32$

$\overset{3}{4}38$
 $\times 4$
2

$4 \times 3 = 12$
 $12 + 3 = 15$

$\overset{1}{4}38$
 $\times 4$
52

$4 \times 4 = 16$
 $16 + 1 = 17$

$\overset{1}{4}38$
 $\times 4$
1752

B $6 \times 4 = 24$

$\overset{2}{5}374$
 $\times 6$
4

$6 \times 7 = 42$
 $42 + 2 = 44$

$\overset{4}{5}374$
 $\times 6$
44

$6 \times 3 = 18$
 $18 + 4 = 22$

$\overset{2}{5}374$
 $\times 6$
244

$6 \times 5 = 30$
 $30 + 2 = 32$

$\overset{3}{5}374$
 $\times 6$
32244

3. Find the products.

A 395

$\times 5$

1975

B 416

$\times 6$

2496

C 748

$\times 3$

2244

D 876

$\times 7$

6132

E 397

$\times 5$

1985

F 850

$\times 9$

7650

G 206

$\times 6$

1236

H 352

$\times 4$

1408

I 2865

$\times 3$

8595

J 4237

$\times 5$

21185

K 9345

$\times 7$

65415

L 3475

$\times 6$

20850

1. Solve the equations.

A $20 \times 34 = \boxed{10} \times 2 \times 34$

C $40 \times 56 = 10 \times 4 \times \boxed{56}$

B $30 \times 82 = 10 \times \boxed{3} \times 82$

D $\boxed{50} \times 23 = 10 \times 5 \times 23$

2. Solve the equations.

A Since $3 \times 82 = \underline{246}$, we know that $30 \times 82 = \underline{2460}$.

B Since $4 \times 56 = \underline{224}$, we know that $40 \times 56 = \underline{2240}$.

3. Fill the blanks.

A To multiply by 20, multiply by 2 and then multiply by 10.

B To multiply by 30, multiply by 3 and then multiply by 10.

C To multiply by 40, multiply by 4 and then multiply by 10.

D To multiply by 90, multiply by 9 and then multiply by 10.

E To multiply by 60, multiply by 6 and then multiply by 10.

4. Write the correct digit in each .

A ① Write the product 3×56 .

② Multiply by 10.

B ① Write the product 4×76 .

② Multiply by 10.

$$\begin{array}{r} 56 \\ \times 30 \\ \hline 168 \end{array}$$

$$\begin{array}{r} 56 \\ \times 30 \\ \hline 1680 \end{array}$$

$$\begin{array}{r} 76 \\ \times 40 \\ \hline 304 \end{array}$$

$$\begin{array}{r} 76 \\ \times 40 \\ \hline 3040 \end{array}$$

5. Find the products.

A $\begin{array}{r} 39 \\ \times 20 \\ \hline 780 \end{array}$

B $\begin{array}{r} 24 \\ \times 50 \\ \hline 1200 \end{array}$

C $\begin{array}{r} 57 \\ \times 40 \\ \hline 2280 \end{array}$

D $\begin{array}{r} 49 \\ \times 30 \\ \hline 1470 \end{array}$

E $\begin{array}{r} 35 \\ \times 60 \\ \hline 2100 \end{array}$

F $\begin{array}{r} 28 \\ \times 90 \\ \hline 2520 \end{array}$

G $\begin{array}{r} 64 \\ \times 80 \\ \hline 5120 \end{array}$

H $\begin{array}{r} 59 \\ \times 40 \\ \hline 2360 \end{array}$

I $\begin{array}{r} 95 \\ \times 70 \\ \hline 6650 \end{array}$

J $\begin{array}{r} 63 \\ \times 90 \\ \hline 5670 \end{array}$

K $\begin{array}{r} 85 \\ \times 50 \\ \hline 4250 \end{array}$

L $\begin{array}{r} 67 \\ \times 60 \\ \hline 4020 \end{array}$

1. Write the correct digit in each .

A 6 7

× 2 4

2 6 8

6 7
× 4

6 7

× 2 4

2 6 8

1 3 4 0

6 7
× 2 0

6 7

× 2 4

2 6 8

1 3 4 0

6 7
× 2 4

B 3 6

× 2 3

1 0 8

3 6
× 3

7 2 0

3 6
× 2 0

8 2 8

3 6
× 2 3

C 5 4

× 4 6

3 2 4

5 4
× 6

2 1 6 0

5 4
× 4 0

2 4 8 4

5 4
× 4 6

D 7 2

× 2 5

3 6 0

7 2
× 5

1 4 4 0

7 2
× 2 0

1 8 0 0

7 2
× 2 5

2. Find the products.

A 5 2
× 3 4
1 7 6 8

B 2 8
× 1 6
4 4 8

C 4 5
× 6 0
2 7 0 0

D 3 8
× 2 5
9 5 0

E 8 3
× 3 7
3 0 7 1

F 6 4
× 6 3
4 0 3 2

G 7 5
× 2 4
1 8 0 0

H 5 4
× 4 7
2 5 3 8

I 9 2
× 3 6
3 3 1 2

J 2 3
× 6 7
1 5 4 1

K 1 8
× 9 1
1 6 3 8

L 6 5
× 4 9
3 1 8 5

Find the products.

$$\begin{array}{r} 1. \quad 42 \\ \times 3 \\ \hline 126 \end{array}$$

$$\begin{array}{r} 2. \quad 56 \\ \times 4 \\ \hline 224 \end{array}$$

$$\begin{array}{r} 3. \quad 39 \\ \times 6 \\ \hline 234 \end{array}$$

$$\begin{array}{r} 4. \quad 78 \\ \times 5 \\ \hline 390 \end{array}$$

$$\begin{array}{r} 5. \quad 96 \\ \times 8 \\ \hline 768 \end{array}$$

$$\begin{array}{r} 6. \quad 815 \\ \times 7 \\ \hline 5705 \end{array}$$

$$\begin{array}{r} 7. \quad 509 \\ \times 6 \\ \hline 3054 \end{array}$$

$$\begin{array}{r} 8. \quad 625 \\ \times 9 \\ \hline 5625 \end{array}$$

$$\begin{array}{r} 9. \quad 729 \\ \times 8 \\ \hline 5832 \end{array}$$

$$\begin{array}{r} 10. \quad 870 \\ \times 4 \\ \hline 3480 \end{array}$$

$$\begin{array}{r} 11. \quad 67 \\ \times 80 \\ \hline 5360 \end{array}$$

$$\begin{array}{r} 12. \quad 89 \\ \times 40 \\ \hline 3560 \end{array}$$

$$\begin{array}{r} 13. \quad 64 \\ \times 94 \\ \hline 6016 \end{array}$$

$$\begin{array}{r} 14. \quad 95 \\ \times 76 \\ \hline 7220 \end{array}$$

$$\begin{array}{r} 15. \quad 775 \\ \times 85 \\ \hline 65875 \end{array}$$

CHANGE OF PACE

Here is a math "trick" that will help you find a person's age and the day of the month on which he was born. Like most tricks, it is possible to tell why it works. You will probably not be able to explain this trick until after you have studied algebra. Right now you can have fun using the trick to surprise your friends.

Suppose your friend is **12** years old and his birthday is April **23**.

Ask your friend to secretly:

- ① Multiply his age by 4. $\longrightarrow 4 \times 12 = 48$
- ② Add 10. $\longrightarrow 48 + 10 = 58$
- ③ Multiply by 25. $\longrightarrow 58 \times 25 = 1450$
- ④ Subtract the number of days in a year (365). $\longrightarrow 1450 - 365 = 1085$
- ⑤ Add the day of his birthday. $\longrightarrow 1085 + 23 = 1108$
- ⑥ Add 115. $\longrightarrow 1108 + 115 = \underbrace{1223}_{\text{age date}}$

When your friend gives you the answer, use the first 2 digits to tell your friend's age and the last two digits to tell the day of the month on which he was born.

Check this trick, using your own age and birthdate. Try this trick on a friend.

1. There are 365 days in an ordinary year. How many days are in 3 years?

1095

FEBRUARY						
SUN	MON	TUE	WED	THU	FRI	SAT
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

2. There are 24 candy bars in a box. If a store buys 8 boxes, how many candy bars does it have? 192

3. Tom had 9 quarters. How many cents are they worth? 225 ¢



4. 60 seconds is the same amount of time as 1 minute. How many seconds are in 24 minutes? 1440 s

5. There are 1000 metres in a kilometre. How many metres are in 6 kilometres? 6000 metres

6. Mr. Jones sold 12 dozen eggs. There are 12 eggs in a dozen. How many eggs did he sell? 144

7. If a dozen eggs cost 37¢, how much do 12 dozen eggs cost? \$4.44

8. Each workbook has 96 pages. 4 workbooks.

How many pages? 384

9. If the average number of pupils in a classroom is 23 and there are 57 classrooms in a city, how many pupils are there in

the school system? 1311

10. Each box contains 24 Christmas tree bulbs. If you need 100 bulbs, will 4 boxes be enough?

NO ($4 \times 24 = 96$)



11. There are 43 rows of chairs with 25 chairs in each row. How many chairs in all? 1075

12. An automobile uses 1 litre of gasoline to go 6 km. At this rate, how far can it go while using

63 litres of gasoline? 378 km



13. If an auto could travel 54 kilometres per hour for 24 hours, how far

would it go? 1296 kilometres

14. Sue's sister, Joan, spent 23 hours one week as a baby sitter. If Joan earned 45 cents an hour, how much

was her total pay? \$10.35

1. Write the correct digit in each .

	Step 1	Step 2	Step 3	Step 4
A	<p>Think</p> $\begin{array}{r} 426 \\ \times 2 \\ \hline \end{array}$ $\begin{array}{r} 426 \\ \times 372 \\ \hline 852 \end{array}$	<p>Think</p> $\begin{array}{r} 426 \\ \times 70 \\ \hline \end{array}$ $\begin{array}{r} 426 \\ \times 372 \\ \hline 852 \\ 29820 \end{array}$	<p>Think</p> $\begin{array}{r} 426 \\ \times 300 \\ \hline \end{array}$ $\begin{array}{r} 426 \\ \times 372 \\ \hline 852 \\ 29820 \\ 127800 \end{array}$	<p>Think</p> $\begin{array}{r} 852 \\ 29820 \\ + 127800 \\ \hline \end{array}$ $\begin{array}{r} 426 \\ \times 372 \\ \hline 852 \\ 29820 \\ 127800 \\ \hline 158472 \end{array}$
B	<p>Think</p> $\begin{array}{r} 324 \\ \times 6 \\ \hline \end{array}$ $\begin{array}{r} 324 \\ \times 206 \\ \hline 1944 \end{array}$	<p>Think</p> $\begin{array}{r} 324 \\ \times 200 \\ \hline \end{array}$ $\begin{array}{r} 324 \\ \times 206 \\ \hline 1944 \\ 64800 \end{array}$	<p>Think</p> $\begin{array}{r} 1944 \\ + 64800 \\ \hline \end{array}$ $\begin{array}{r} 324 \\ \times 206 \\ \hline 1944 \\ 64800 \\ \hline 66744 \end{array}$	

2. Find the products.

A $\begin{array}{r} 199 \\ \times 487 \\ \hline 96913 \end{array}$	B $\begin{array}{r} 507 \\ \times 924 \\ \hline 468468 \end{array}$	C $\begin{array}{r} 480 \\ \times 675 \\ \hline 324000 \end{array}$	D $\begin{array}{r} 951 \\ \times 403 \\ \hline 289104 \end{array}$	E $\begin{array}{r} 769 \\ \times 222 \\ \hline 170718 \end{array}$
F $\begin{array}{r} 644 \\ \times 394 \\ \hline 253736 \end{array}$	G $\begin{array}{r} 343 \\ \times 707 \\ \hline 242501 \end{array}$	H $\begin{array}{r} 928 \\ \times 652 \\ \hline 605056 \end{array}$	I $\begin{array}{r} 805 \\ \times 999 \\ \hline 804195 \end{array}$	J $\begin{array}{r} 539 \\ \times 806 \\ \hline 434434 \end{array}$

Find the products.

$$\begin{array}{r} 1. \quad 75 \\ \times 4 \\ \hline 300 \end{array}$$

$$\begin{array}{r} 2. \quad 29 \\ \times 8 \\ \hline 232 \end{array}$$

$$\begin{array}{r} 3. \quad 38 \\ \times 5 \\ \hline 190 \end{array}$$

$$\begin{array}{r} 4. \quad 92 \\ \times 40 \\ \hline 3680 \end{array}$$

$$\begin{array}{r} 5. \quad 87 \\ \times 30 \\ \hline 2510 \end{array}$$

$$\begin{array}{r} 6. \quad 17 \\ \times 24 \\ \hline 408 \end{array}$$

$$\begin{array}{r} 7. \quad 49 \\ \times 35 \\ \hline 1715 \end{array}$$

$$\begin{array}{r} 8. \quad 86 \\ \times 81 \\ \hline 6966 \end{array}$$

$$\begin{array}{r} 9. \quad 50 \\ \times 27 \\ \hline 1350 \end{array}$$

$$\begin{array}{r} 10. \quad 66 \\ \times 39 \\ \hline 2574 \end{array}$$

$$\begin{array}{r} 11. \quad 942 \\ \times 31 \\ \hline 29202 \end{array}$$

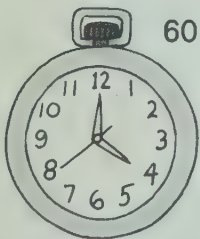
$$\begin{array}{r} 12. \quad 256 \\ \times 300 \\ \hline 76800 \end{array}$$

$$\begin{array}{r} 13. \quad 463 \\ \times 527 \\ \hline 244001 \end{array}$$

$$\begin{array}{r} 14. \quad 808 \\ \times 795 \\ \hline 642360 \end{array}$$

$$\begin{array}{r} 15. \quad 719 \\ \times 906 \\ \hline 651414 \end{array}$$

Short Stories—Time



60 seconds (s) = 1 minute

60 minutes = 1 hour

24 hours = 1 day

7 days = 1 week

52 weeks = 1 year

12 months = 1 year

365 days = 1 year

366 days = 1 leap year

FEBRUARY						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

1. 5 days. How many hours? 120

2. Sleep 8 hours. How many minutes?

480

3. 1 week. How many hours? 168

4. 3 years plus 1 leap year.

How many days? 1461

5. 13 years old. How many

months old? 156

6. School lasts 36 weeks.

How many days? 252

7. 1 day. How many minutes? 1440

8. 31 days. How many hours? 744

1. Solve the equations.

A $4 \times 27 = (4 \times 20) + (4 \times \boxed{7})$ B $6 \times 46 = (6 \times 40) + (6 \times \boxed{6})$

C $30 \times 48 = 10 \times \boxed{3} \times 48$ D $97 \times 50 = 97 \times 5 \times \boxed{10}$

E $5 \times 936 = (5 \times 900) + (5 \times \boxed{30}) + (5 \times 6)$

2. Find the products.

A $\begin{array}{r} 74 \\ \times 5 \\ \hline 370 \end{array}$

B $\begin{array}{r} 81 \\ \times 9 \\ \hline 729 \end{array}$

C $\begin{array}{r} 53 \\ \times 70 \\ \hline 3710 \end{array}$

D $\begin{array}{r} 95 \\ \times 35 \\ \hline 3325 \end{array}$

E $\begin{array}{r} 44 \\ \times 88 \\ \hline 3872 \end{array}$

F $\begin{array}{r} 353 \\ \times 38 \\ \hline 13414 \end{array}$

G $\begin{array}{r} 101 \\ \times 54 \\ \hline 5454 \end{array}$

H $\begin{array}{r} 787 \\ \times 46 \\ \hline 36202 \end{array}$

I $\begin{array}{r} 399 \\ \times 467 \\ \hline 186333 \end{array}$

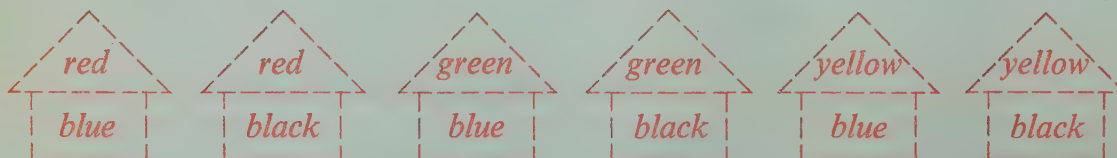
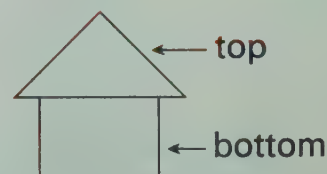
J $\begin{array}{r} 725 \\ \times 602 \\ \hline 436450 \end{array}$

3. It took 24 egg shells for each fourth-grader's art project this week. There were 33 pupils in the class. How many egg shells were used in all? 792

CHANGE OF PACE

1. In the space below draw figures like this one and color the top part **red, green, or yellow**. Color the bottom part **blue or black**. Show all the different ways to color the figure.

How many different ways are there? 6

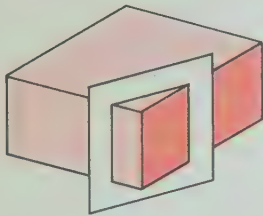


2. If you color the top part **pink or orange** and the bottom part **black, red, green, or blue**, how many different ways are there to color the figure? 8

3. If you color the top part **red, blue, yellow, or black** and the bottom part **green, red, or purple**, how many different ways are there to color the figure? 12

If you could cut through each solid figure and trace around it on a piece of paper as shown, which shape would you get? Place a ✓ in the figure you choose.

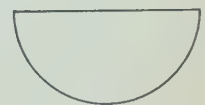
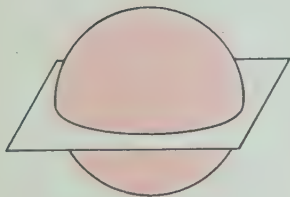
1.



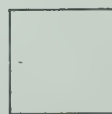
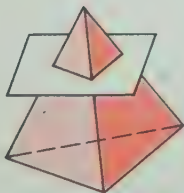
2.



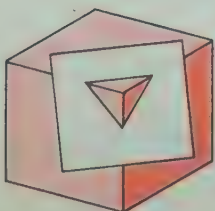
3.



4.



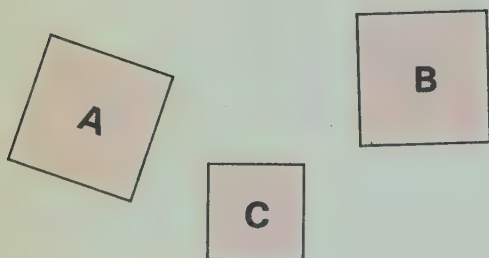
5.



Figures that have the same size and same shape are **congruent**.

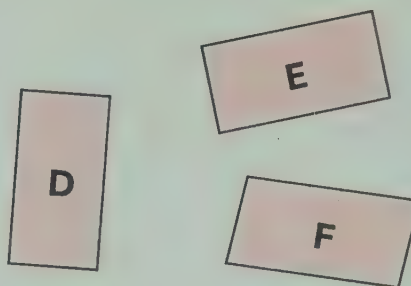
Complete each sentence.

1.



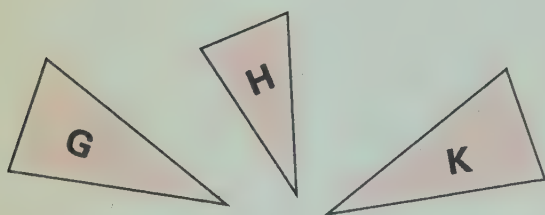
Square **A** is congruent to square **B**.

2.



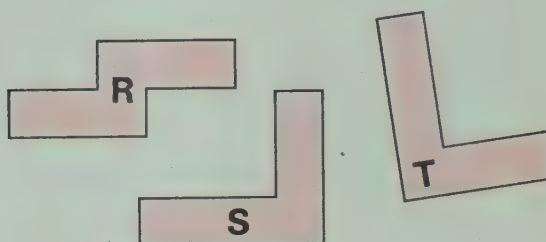
Rectangle **D** is congruent to rectangle **E**.

3.



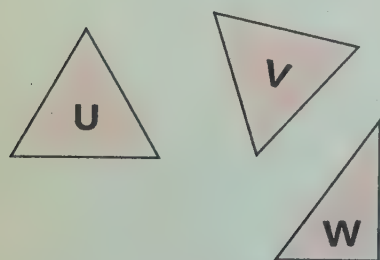
Triangle **G** is congruent to triangle **K**.

4.



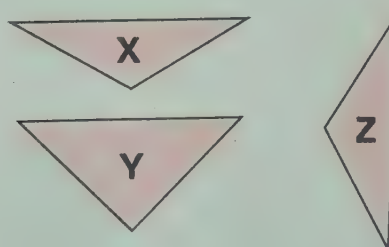
Region **S** is congruent to region **T**.

5.



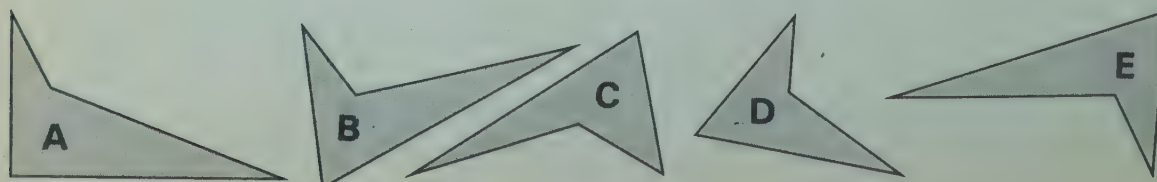
Triangle **U** is congruent to triangle **V**.

6.



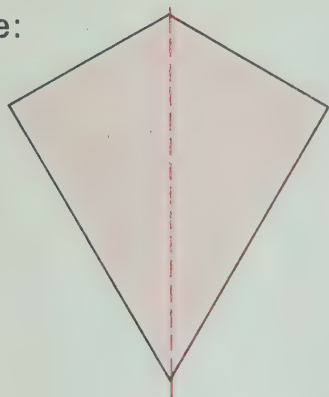
Triangle **X** is congruent to triangle **Z**.

7. Which two figures are congruent? **B** and **E**

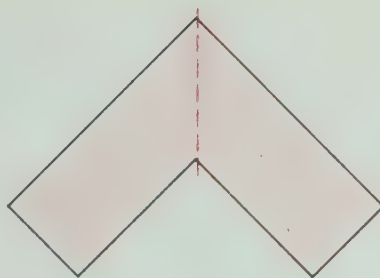


1. Draw as many lines of symmetry for each figure as you can find.
Each line of symmetry should divide the figure into 2 congruent figures.

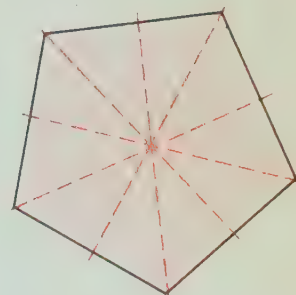
Example:



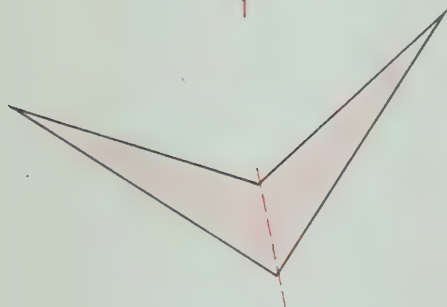
A



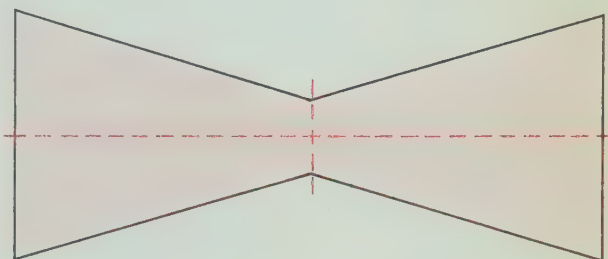
B



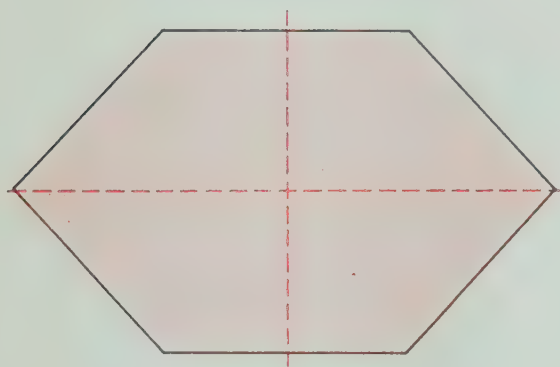
C



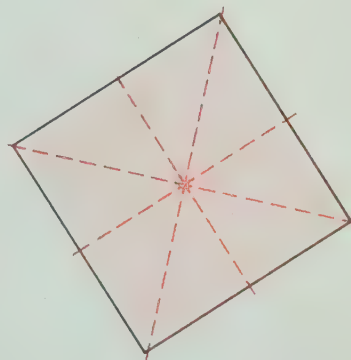
D



E

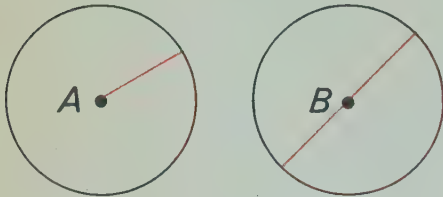


F

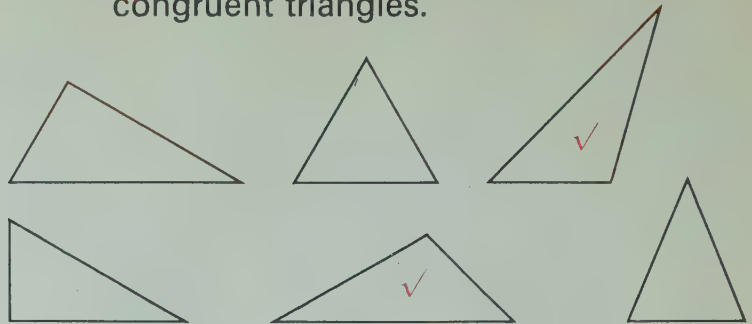


2. Which figures have more than one line of symmetry? D, E, and F
3. Which figure has the most lines of symmetry? F
4. In which figure does a line of symmetry divide the figure into 2 congruent pentagons? E
5. In which figures does a line of symmetry divide the figure into 2 congruent triangles? C and F

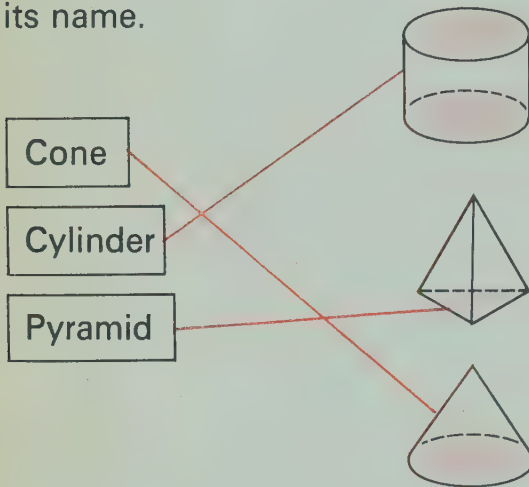
1. Draw a radius in circle A.
Draw a diameter in circle B.



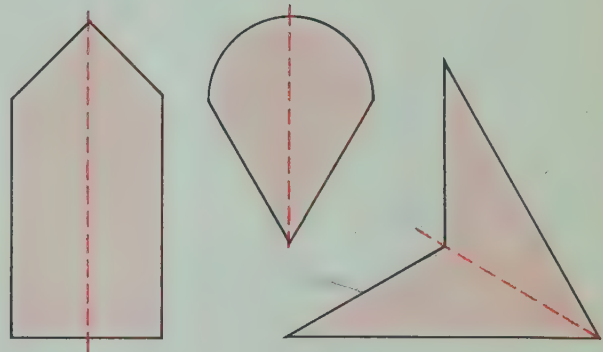
2. Place \checkmark 's in the pair of congruent triangles.



3. Match each figure with its name.



4. Draw a line of symmetry through each figure.



CHANGE OF PACE

Work the puzzle.

Across

1. 7×90
3. $300 + 400 + 70 + 1$
7. 4 tens
9. $5 \times (8 \times 10)$
10. $1254 + 10$
12. Ten thousand seventy
13. $60\,000 + 900 + 1$
18. $10 \times 10 \times 10$
19. $950 < \underline{\quad} < 952$
21. $83 \times \underline{\quad} = 830$
22. $(9 \times 1000) + 10$
23. $2 \times (3 \times 100)$

Down

1. $(80 \times 80) + 1$
2. $120 \div 40$
4. $(4 \times 100) + (4 \times 10) + 4$
5. $210 \div 3$
6. 10 tens
8. 8276×10
10. $560 \div 56$
11. 60×1000
14. 30×3
16. Ten hundred
17. $1000 - 1$
18. $100 + 10 + 1$
20. $\underline{\quad} \times 2 = 100$
21. $100 - 90$

1 6	2 3	0		3 3	4 4	5 7	6 1
7 4	0		8 8		9 4	0	0
0		10 1	2	11 6	4		0
12 1	0	0	7	0			
			13 6	0	14 9	15 9	16 1
17 9		18 1	0	0	0		0
19 9	20 5	1		0		21 1	0
22 9	0	1	0		23 6	0	0

Jean, Don, and Bob worked the same problem. Study their work and answer the questions.

$204 \div 6$ <i>Jean</i>	$204 \div 6$ <i>Don</i>	$204 \div 6$ <i>Bob</i>
$ \begin{array}{r} 204 \\ -60 \\ \hline 144 \\ -60 \\ \hline 84 \\ -60 \\ \hline 24 \\ -24 \\ \hline 0 \end{array} $ <div style="display: flex; justify-content: space-between; margin-top: 5px;"> (10)(10)(10)(4)</div> <div style="border: 1px solid black; display: inline-block; padding: 2px 5px; margin-top: 5px;">34</div>	$ \begin{array}{r} 34 \\ 6 \overline{) 204} \\ \underline{-120} \leftarrow 20 \times 6 \\ 84 \\ \underline{-60} \leftarrow 10 \times 6 \\ 24 \\ \underline{-24} \leftarrow 4 \times 6 \\ 0 \end{array} $	$ \begin{array}{r} 34 \\ 6 \overline{) 204} \\ \underline{-180} \\ 24 \\ \underline{-24} \\ 0 \end{array} $ <div style="display: flex; justify-content: space-between; margin-top: 5px;"> (30)(4)</div>

1. **Jean**
 - A How many sixes were subtracted the first time? 10
The second time? 10 The third time? 10 The last time? 4
 - B How many sixes were subtracted in all? 34

2. **Don**
 - A How many sixes were subtracted the first time? 20
The second time? 10 The last time? 4
 - B How many sixes were subtracted in all? 34

3. **Bob**
 - A How many sixes were subtracted the first time? 30
 - B How many sixes were subtracted the second time? 4
 - C How many sixes were subtracted in all? 34

4. **A** Whose work is shortest? Bob's
 - B Did everyone find the same quotient for $204 \div 6$? Yes
 - C What is the quotient for $204 \div 6$? 34

1. Use your own method of subtracting to find these quotients.

A $4 \overline{) 196}$

B $3 \overline{) 84}$

C $5 \overline{) 155}$

D $3 \overline{) 108}$

E $6 \overline{) 174}$

F $8 \overline{) 184}$

2. Find the missing numbers.

A $3 \overline{) 108}$
 $\begin{array}{r} - 90 \\ \hline 18 \\ - 18 \\ \hline 0 \end{array}$
 (30) $\times 3$
 (6) $\times 3$

B $5 \overline{) 123}$
 $\begin{array}{r} - 100 \\ \hline 23 \\ - 20 \\ \hline 3 \end{array}$
 (20) $\times 5$
 (4) $\times 5$

C $4 \overline{) 374}$
 $\begin{array}{r} - 360 \\ \hline 14 \\ - 12 \\ \hline 2 \end{array}$
 (90) $\times 4$
 (3) $\times 4$

D $6 \overline{) 453}$
 $\begin{array}{r} - 420 \\ \hline 33 \\ - 30 \\ \hline 3 \end{array}$
 (70) $\times 6$
 (5) $\times 6$

E $2 \overline{) 96}$
 $\begin{array}{r} - 80 \\ \hline 16 \\ - 16 \\ \hline 0 \end{array}$
 (40) $\times 2$
 (8) $\times 2$

F $4 \overline{) 346}$
 $\begin{array}{r} - 320 \\ \hline 26 \\ - 24 \\ \hline 2 \end{array}$
 (80) $\times 4$
 (6) $\times 4$

Study the examples.

$$\begin{array}{r} 3 \leftarrow \text{quotient} \\ \text{divisor} \rightarrow 5 \overline{)15} \leftarrow \text{dividend} \\ -15 \\ \hline 0 \leftarrow \text{remainder} \end{array}$$

$$\begin{array}{r} 3 \leftarrow \text{quotient} \\ \text{divisor} \rightarrow 5 \overline{)17} \leftarrow \text{dividend} \\ -15 \\ \hline 2 \leftarrow \text{remainder} \end{array}$$

$$5 \overline{)15} \quad 3$$

$$5 \overline{)17} \quad 3 \text{ R } 2$$

If the dividing has been completed correctly, the remainder is less than the divisor.

1. Find the quotients and remainders.

A $4 \overline{)17} \quad 4 \text{ R } 1$

B $6 \overline{)38} \quad 6 \text{ R } 2$

C $3 \overline{)28} \quad 9 \text{ R } 1$

D $5 \overline{)44} \quad 8 \text{ R } 4$

E $8 \overline{)49} \quad 6 \text{ R } 1$

F $7 \overline{)45} \quad 6 \text{ R } 3$

G $8 \overline{)75} \quad 9 \text{ R } 3$

H $9 \overline{)63} \quad 9 \text{ R } 0$

2. Solve each story problem.

- A How many 8¢ stamps can you buy for 25¢? 3 stamps
How much money will you have left? 1 ¢

- B 25 children are to line up in rows of 7.
How many full rows will there be? 3 rows
How many children will be left? 4 children

1. Choose the correct number pair to complete the inequalities in each part. Then find the quotient and remainder.

Number
pairs:

1	2	3	4	5	6	7	8	9
2	3	4	5	6	7	8	9	10

A $2 \times 3 < 8$

$3 \times 3 > 8$

$3 \overline{) 8} \quad 2 \text{ R } 2$

B $9 \times 4 < 39$

$10 \times 4 > 39$

$4 \overline{) 39} \quad 9 \text{ R } 3$

C $8 \times 6 < 53$

$9 \times 6 > 53$

$6 \overline{) 53} \quad 8 \text{ R } 5$

D $6 \times 8 < 55$

$7 \times 8 > 55$

$8 \overline{) 55} \quad 6 \text{ R } 7$

E $4 \times 7 < 31$

$5 \times 8 > 31$

$7 \overline{) 31} \quad 4 \text{ R } 3$

F $5 \times 9 < 49$

$6 \times 9 > 49$

$9 \overline{) 49} \quad 5 \text{ R } 4$

2. Choose the correct number pair to complete the inequalities in each part.

Number
pairs:

10	20	30	40	50	60	70	80	90
20	30	40	50	60	70	80	90	100

A $30 \times 4 < 130$

$40 \times 4 > 130$

B $20 \times 6 < 160$

$30 \times 6 > 160$

C $70 \times 9 < 650$

$80 \times 9 > 650$

D $60 \times 7 < 460$

$70 \times 7 > 460$

E $40 \times 7 < 300$

$50 \times 7 > 300$

F $90 \times 5 < 490$

$100 \times 5 > 490$

● Using Estimation to Find Quotients

From the set {10, 20, 30, 40, 50, 60, 70, 80, 90}, choose the **largest** number that will make the inequality sentence true. Write this number in the circle. Then write the other missing digits to complete the dividing.

1.
$$\begin{array}{r} 18 \\ 3 \overline{) 54} \\ \underline{- 30} \\ 24 \\ \underline{- 24} \\ 0 \end{array}$$
 $\leftarrow (10) \times 3 < 54$

2.
$$\begin{array}{r} 42 \\ 2 \overline{) 85} \\ \underline{- 80} \\ 5 \\ \underline{- 4} \\ 1 \end{array}$$
 $\leftarrow (40) \times 2 < 85$

3.
$$\begin{array}{r} 33 \\ 4 \overline{) 132} \\ \underline{- 120} \\ 12 \\ \underline{- 12} \\ 0 \end{array}$$
 $\leftarrow (30) \times 4 < 132$

4.
$$\begin{array}{r} 43 \\ 6 \overline{) 263} \\ \underline{- 240} \\ 23 \\ \underline{- 18} \\ 5 \end{array}$$
 $\leftarrow (40) \times 6 < 263$

5.
$$\begin{array}{r} 42 \\ 7 \overline{) 295} \\ \underline{- 280} \\ 15 \\ \underline{- 14} \\ 1 \end{array}$$
 $\leftarrow (40) \times 7 < 295$

6.
$$\begin{array}{r} 64 \\ 5 \overline{) 324} \\ \underline{- 300} \\ 24 \\ \underline{- 20} \\ 4 \end{array}$$
 $\leftarrow (60) \times 5 < 324$

7.
$$\begin{array}{r} 31 \\ 9 \overline{) 284} \\ \underline{- 270} \\ 14 \\ \underline{- 9} \\ 5 \end{array}$$
 $\leftarrow (30) \times 9 < 284$

8.
$$\begin{array}{r} 65 \\ 7 \overline{) 456} \\ \underline{- 420} \\ 36 \\ \underline{- 35} \\ 1 \end{array}$$
 $\leftarrow (60) \times 7 < 456$

● Finding and Checking 2-Digit Quotients

1. Complete the "check" to see if the dividing was done correctly.
Put a ring around **correct** or **incorrect** for each exercise.

A

$$\begin{array}{r} 73 \\ 4 \overline{) 295} \\ \underline{280} \\ 15 \\ \underline{12} \\ 3 \end{array}$$

Check

$$\begin{array}{r} 73 \\ \times 4 \\ \hline 292 \\ + 3 \\ \hline 295 \end{array}$$

correct

incorrect

B

$$\begin{array}{r} 65 \\ 6 \overline{) 405} \\ \underline{360} \\ 35 \\ \underline{30} \\ 5 \end{array}$$

Check

$$\begin{array}{r} 65 \\ \times 6 \\ \hline 390 \\ + 5 \\ \hline 395 \end{array}$$

correct

incorrect

C

$$\begin{array}{r} 83 \\ 7 \overline{) 583} \\ \underline{560} \\ 23 \\ \underline{21} \\ 2 \end{array}$$

Check

$$\begin{array}{r} 83 \\ \times 7 \\ \hline 581 \\ + 2 \\ \hline 583 \end{array}$$

correct

incorrect

2. Find the quotients and remainders. Check your work.

A

$$\begin{array}{r} 58 \\ 3 \overline{) 175} \\ \underline{150} \\ 25 \\ \underline{24} \\ 1 \end{array}$$

Check

$$\begin{array}{r} 58 \\ \times 3 \\ \hline 174 \\ + 1 \\ \hline 175 \end{array}$$

B

$$\begin{array}{r} 87 \\ 4 \overline{) 350} \\ \underline{320} \\ 30 \\ \underline{28} \\ 2 \end{array}$$

Check

$$\begin{array}{r} 87 \\ \times 4 \\ \hline 348 \\ + 2 \\ \hline 350 \end{array}$$

C

$$\begin{array}{r} 78 \\ 6 \overline{) 473} \\ \underline{420} \\ 53 \\ \underline{48} \\ 5 \end{array}$$

Check

$$\begin{array}{r} 78 \\ \times 6 \\ \hline 468 \\ + 5 \\ \hline 473 \end{array}$$

D

$$\begin{array}{r} 59 \\ 5 \overline{) 298} \\ \underline{250} \\ 48 \\ \underline{45} \\ 3 \end{array}$$

Check

$$\begin{array}{r} 59 \\ \times 5 \\ \hline 295 \\ + 3 \\ \hline 298 \end{array}$$

E

$$\begin{array}{r} 78 \\ 9 \overline{) 707} \\ \underline{630} \\ 77 \\ \underline{72} \\ 5 \end{array}$$

Check

$$\begin{array}{r} 78 \\ \times 9 \\ \hline 702 \\ + 5 \\ \hline 707 \end{array}$$

F

$$\begin{array}{r} 92 \\ 4 \overline{) 369} \\ \underline{360} \\ 9 \\ \underline{8} \\ 1 \end{array}$$

Check

$$\begin{array}{r} 92 \\ \times 4 \\ \hline 368 \\ + 1 \\ \hline 369 \end{array}$$

When 5 is substituted for each addend, the sum is the same.
The average of 4, 8, and 3 is 5.

$$5 + 5 + 5 = 15$$



1. Find the sum. Then write the correct substitute in each .

A $5 + 5 + 5 + 5 = \boxed{20}$

When 5 is substituted for each addend, the sum is the same.
The average of 4, 6, 8, and 2 is 5.

B $6 + 6 + 6 + 6 + 6 = \boxed{30}$

When 6 is substituted for each addend, the sum is the same.
The average of 3, 7, 9, 6, and 5 is 6.

C $9 + 9 + 9 = \boxed{27}$

The average of 12, 8, and 7 is 9.

2. Write the missing numbers.

- A The average of 14 and 16 is 15. c The average of 8, 10, and 12 is 10.
B The average of 20 and 30 is 25. d The average of 9, 16, and 5 is 10.

3. Complete the sentences.

- A The sum of 3, 5, and 4 is 12. To find the average of 3, 5, 4, divide 12 by 3.
B To find the average of 6, 8, 5, 9, divide 28 by 4.
C To find the average of 9, 11, and 4, divide 24 by 3.
D To find the average of any 3 numbers, divide their sum by 3.
E To find the average of a set of numbers, divide the sum of the numbers by the number of addends.

4. Find the average of the numbers in each set.

- A {4, 9, 7, 12} 8 D {39, 21, 45} 35
B {5, 3, 9, 7} 6 E {70, 54, 62, 98, 26, 14} 54
C {16, 22} 19 F {47, 65, 33, 89, 56} 58

● Estimating 3-Digit Quotients

From the set {100, 200, 300, 400, 500, 600, 700, 800, 900}, choose the **largest** number that makes the inequality sentence true. Write this number in the circle. Then complete the dividing.

1.
$$\begin{array}{r} 2 \overline{) 464} \\ - 400 \\ \hline 64 \\ 60 \\ \hline 4 \\ 4 \\ \hline 0 \end{array} \leftarrow (200) \times 2 < 464$$

2.
$$\begin{array}{r} 4 \overline{) 2346} \\ - 2000 \\ \hline 346 \\ 320 \\ \hline 26 \\ 24 \\ \hline 2 \end{array} \leftarrow (500) \times 4 < 2346$$

3.
$$\begin{array}{r} 3 \overline{) 1973} \\ - 1800 \\ \hline 173 \\ 150 \\ \hline 23 \\ 21 \\ \hline 2 \end{array} \leftarrow (600) \times 3 < 1973$$

4.
$$\begin{array}{r} 5 \overline{) 4462} \\ - 4000 \\ \hline 462 \\ 450 \\ \hline 12 \\ 10 \\ \hline 2 \end{array} \leftarrow (800) \times 5 < 4462$$

5.
$$\begin{array}{r} 9 \overline{) 3468} \\ - 2700 \\ \hline 768 \\ 720 \\ \hline 48 \\ 45 \\ \hline 3 \end{array} \leftarrow (300) \times 9 < 3468$$

6.
$$\begin{array}{r} 8 \overline{) 4067} \\ - 4000 \\ \hline 67 \\ 64 \\ \hline 3 \end{array} \leftarrow (500) \times 8 < 4067$$

7.
$$\begin{array}{r} 6 \overline{) 847} \\ - 600 \\ \hline 247 \\ 240 \\ \hline 7 \\ 6 \\ \hline 1 \end{array} \leftarrow (100) \times 6 < 847$$

8.
$$\begin{array}{r} 6 \overline{) 5938} \\ - 5400 \\ \hline 538 \\ 480 \\ \hline 58 \\ 54 \\ \hline 4 \end{array} \leftarrow (900) \times 6 < 5938$$

● Finding and Checking 3-Digit Quotients

Find the quotients and remainders. Check your work.

1.
$$\begin{array}{r} 106 \\ 3 \overline{) 320} \\ \underline{300} \\ 20 \\ \underline{18} \\ 2 \end{array}$$
 Check
$$\begin{array}{r} 106 \\ \times 3 \\ \hline 318 \\ + 2 \\ \hline 320 \end{array}$$

2.
$$\begin{array}{r} 115 \\ 6 \overline{) 695} \\ \underline{600} \\ 95 \\ \underline{60} \\ 35 \\ \underline{30} \\ 5 \end{array}$$
 Check
$$\begin{array}{r} 115 \\ \times 6 \\ \hline 690 \\ + 5 \\ \hline 695 \end{array}$$

3.
$$\begin{array}{r} 678 \\ 8 \overline{) 5429} \\ \underline{4800} \\ 629 \\ \underline{560} \\ 69 \\ \underline{64} \\ 5 \end{array}$$
 Check
$$\begin{array}{r} 678 \\ \times 8 \\ \hline 5424 \\ + 5 \\ \hline 5429 \end{array}$$

4.
$$\begin{array}{r} 438 \\ 5 \overline{) 2193} \\ \underline{2000} \\ 193 \\ \underline{150} \\ 43 \\ \underline{40} \\ 3 \end{array}$$
 Check
$$\begin{array}{r} 438 \\ \times 5 \\ \hline 2190 \\ + 3 \\ \hline 2193 \end{array}$$

5.
$$\begin{array}{r} 520 \\ 9 \overline{) 4684} \\ \underline{4500} \\ 184 \\ \underline{180} \\ 4 \end{array}$$
 Check
$$\begin{array}{r} 520 \\ \times 9 \\ \hline 4680 \\ + 4 \\ \hline 4684 \end{array}$$

6.
$$\begin{array}{r} 942 \\ 4 \overline{) 3771} \\ \underline{3600} \\ 171 \\ \underline{160} \\ 11 \\ \underline{8} \\ 3 \end{array}$$
 Check
$$\begin{array}{r} 942 \\ \times 4 \\ \hline 3768 \\ + 3 \\ \hline 3771 \end{array}$$

7.
$$\begin{array}{r} 842 \\ 7 \overline{) 5899} \\ \underline{5600} \\ 299 \\ \underline{280} \\ 19 \\ \underline{14} \\ 5 \end{array}$$
 Check
$$\begin{array}{r} 842 \\ \times 7 \\ \hline 5894 \\ + 5 \\ \hline 5899 \end{array}$$

8.
$$\begin{array}{r} 519 \\ 5 \overline{) 2595} \\ \underline{2500} \\ 95 \\ \underline{50} \\ 45 \\ \underline{45} \\ 0 \end{array}$$
 Check
$$\begin{array}{r} 519 \\ \times 5 \\ \hline 2595 \end{array}$$

9.
$$\begin{array}{r} 927 \\ 9 \overline{) 8350} \\ \underline{8100} \\ 250 \\ \underline{180} \\ 70 \\ \underline{63} \\ 7 \end{array}$$
 Check
$$\begin{array}{r} 927 \\ \times 9 \\ \hline 8343 \\ + 7 \\ \hline 8350 \end{array}$$

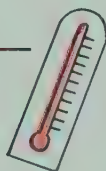
10.
$$\begin{array}{r} 876 \\ 8 \overline{) 7012} \\ \underline{6400} \\ 612 \\ \underline{560} \\ 52 \\ \underline{48} \\ 4 \end{array}$$
 Check
$$\begin{array}{r} 876 \\ \times 8 \\ \hline 7008 \\ + 4 \\ \hline 7012 \end{array}$$

11.
$$\begin{array}{r} 786 \\ 6 \overline{) 4720} \\ \underline{4200} \\ 520 \\ \underline{480} \\ 40 \\ \underline{36} \\ 4 \end{array}$$
 Check
$$\begin{array}{r} 786 \\ \times 6 \\ \hline 4716 \\ + 4 \\ \hline 4720 \end{array}$$

12.
$$\begin{array}{r} 993 \\ 7 \overline{) 6953} \\ \underline{6300} \\ 653 \\ \underline{630} \\ 23 \\ \underline{21} \\ 2 \end{array}$$
 Check
$$\begin{array}{r} 993 \\ \times 7 \\ \hline 6951 \\ + 2 \\ \hline 6953 \end{array}$$

1. John is 152 cm tall, Ted is 148 cm tall, and Sam is 156 cm tall. What is the average height of the 3 boys? 152 cm

2. 6 light bulbs were put into each box. There were 258 light bulbs. How many boxes were needed? 43



3. The temperatures at noon on Friday, Saturday, and Sunday were 30°C, 32°C, and 31°C. What was the average noon temperature for the 3 days? 31°C

4. From a group of 453 batteries, 8 boxes were filled with the same number in each box. How many batteries in each box? 56 How many extra batteries? 5



5. 6 cows were put into each pen. There were 144 cows. How many pens were needed? 24



6. Jane found that there were only 189 days until Christmas. How many 7-day weeks is this? 27

7. A newsboy sold 24 magazines that cost 25¢ each. How much money did he receive? \$6.00

8. A record costs \$3.98 and a book costs \$2.49. What is the total cost? \$6.47

9. What is the average of the following test scores: 94, 86, 88, 97, 100? 93

CHANGE OF PACE

For **magic squares** A and B, find the sum of the numbers along each arrow. Complete C so it will be a magic square.

A

30	25	26
23	27	31
28	29	24

81

81

81

B

34	39	32
33	35	37
38	31	36

105

105

105

C

24	28	29
32	27	22
25	26	30

81 81 81 81 81 105 105 105 105 105

From the set {1, 2, 3, 4, 5, 6, 7, 8, 9}, choose the **largest** number that makes the inequality sentence true. Write this number in the circle. Then complete the dividing.

1.
$$\begin{array}{r} 5 \\ 30 \overline{) 156} \\ \underline{150} \\ 6 \end{array} \leftarrow (5) \times 30 < 156$$

2.
$$\begin{array}{r} 8 \\ 20 \overline{) 174} \\ \underline{160} \\ 14 \end{array} \leftarrow (8) \times 20 < 174$$

3.
$$\begin{array}{r} 7 \\ 50 \overline{) 379} \\ \underline{350} \\ 29 \end{array} \leftarrow (7) \times 50 < 379$$

4.
$$\begin{array}{r} 9 \\ 60 \overline{) 543} \\ \underline{540} \\ 3 \end{array} \leftarrow (9) \times 60 < 543$$

From the set {10, 20, 30, 40, 50, 60, 70, 80, 90}, choose the **largest** number that makes the inequality sentence true. Write this number in the circle. Then complete the dividing.

5.
$$\begin{array}{r} 65 \\ 30 \overline{) 1960} \\ \underline{1800} \\ 160 \\ \underline{150} \\ 10 \end{array} \leftarrow (60) \times 30 < 1960$$

6.
$$\begin{array}{r} 73 \\ 20 \overline{) 1560} \\ \underline{1400} \\ 60 \\ \underline{60} \\ 0 \end{array} \leftarrow (70) \times 20 < 1560$$

7.
$$\begin{array}{r} 79 \\ 40 \overline{) 3190} \\ \underline{2800} \\ 390 \\ \underline{360} \\ 30 \end{array} \leftarrow (70) \times 40 < 3190$$

8.
$$\begin{array}{r} 93 \\ 50 \overline{) 4675} \\ \underline{4500} \\ 175 \\ \underline{150} \\ 25 \end{array} \leftarrow (90) \times 50 < 4675$$

● Estimating Quotients—2-Digit Divisors

Find the **largest** number that makes the sentence in the cloud true. Then multiply to see if this number is the largest one that will make the other sentence true. For each inequality sentence below the cloud, write the **largest** number that makes it true.

1. 5 $\times 30 < 167$ $\begin{array}{r} 34 \\ \times 5 \\ \hline 170 \end{array}$

4 $\times 34 < 167$

2. 6 $\times 40 < 264$ $\begin{array}{r} 39 \\ \times 6 \\ \hline 234 \end{array}$

6 $\times 39 < 264$

3. 8 $\times 60 < 495$ $\begin{array}{r} 62 \\ \times 8 \\ \hline 496 \end{array}$

7 $\times 62 < 495$

4. 8 $\times 20 < 167$ $\begin{array}{r} 18 \\ \times 8 \\ \hline 144 \end{array}$

9 $\times 18 < 167$

5. 8 $\times 70 < 584$ $\begin{array}{r} 66 \\ \times 8 \\ \hline 528 \end{array}$

8 $\times 66 < 584$

6. 9 $\times 30 < 278$ $\begin{array}{r} 29 \\ \times 9 \\ \hline 261 \end{array}$

9 $\times 29 < 278$

7. 6 $\times 40 < 257$ $\begin{array}{r} 42 \\ \times 6 \\ \hline 252 \end{array}$

6 $\times 42 < 257$

8. 8 $\times 50 < 413$ $\begin{array}{r} 53 \\ \times 8 \\ \hline 424 \end{array}$

7 $\times 53 < 413$

9. 8 $\times 60 < 502$ $\begin{array}{r} 63 \\ \times 8 \\ \hline 608 \end{array}$

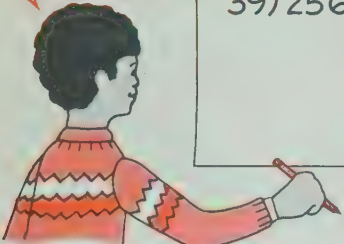
7 $\times 63 < 502$

10. 8 $\times 80 < 653$ $\begin{array}{r} 76 \\ \times 8 \\ \hline 608 \end{array}$

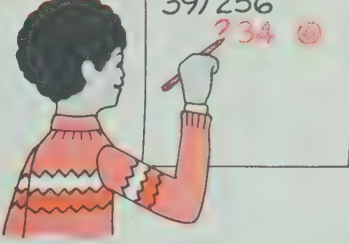
8 $\times 76 < 653$

1. Write the numbers to show what Jeff is thinking.
Study the picture to see how he shows his work.

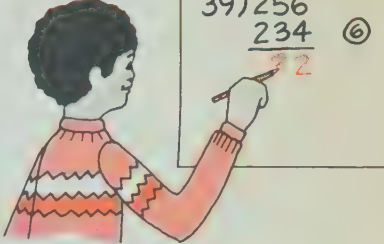
6 × 40 < 256
largest possible number



39
× 6
234

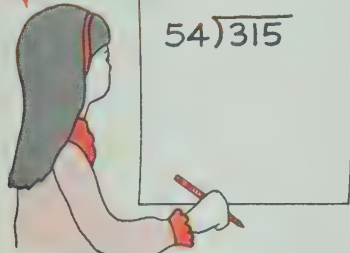


256
- 234
22

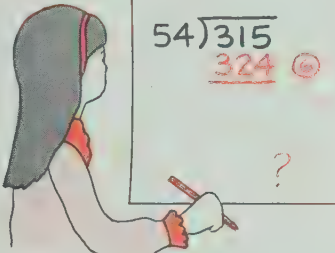


2. Nancy was not able to complete her problem. Study her work.
Then show Nancy how to find the correct quotient and remainder.

6 × 50 < 315
largest possible number



54
× 6
324




Show your work here.


$$\begin{array}{r} 5 \\ 54 \overline{) 315} \\ \underline{270} \\ 45 \end{array}$$

3. Fred's work is not complete. Show Fred how to find the correct quotient without erasing any of his work.

7 × 30 < 222
largest possible number



26
× 7
182



Show your work here.

$$\begin{array}{r} 8 \\ 26 \overline{) 222} \\ \underline{182} \\ 40 \\ \underline{26} \\ 14 \end{array} \quad \begin{array}{l} (7) \\ (1) \end{array}$$

4. Find the quotients and remainders.

A $\begin{array}{r} 8 \\ 29 \overline{) 234} \\ \underline{232} \\ 2 \end{array}$

B $\begin{array}{r} 5 \\ 61 \overline{) 335} \\ \underline{305} \\ 30 \end{array}$

C $\begin{array}{r} 7 \\ 38 \overline{) 289} \\ \underline{266} \\ 23 \end{array}$

D $\begin{array}{r} 8 \\ 56 \overline{) 466} \\ \underline{488} \\ 18 \end{array}$

E $\begin{array}{r} 4 \\ 34 \overline{) 163} \\ \underline{136} \\ 27 \end{array}$

Find the quotients and remainders.

$$\begin{array}{r} 18 \\ 3 \overline{) 55} \\ \underline{30} \\ 25 \\ \underline{24} \\ 1 \end{array}$$

$$\begin{array}{r} 14 \\ 6 \overline{) 85} \\ \underline{60} \\ 25 \\ \underline{24} \\ 1 \end{array}$$

$$\begin{array}{r} 19 \\ 4 \overline{) 77} \\ \underline{40} \\ 37 \\ \underline{36} \\ 1 \end{array}$$

$$\begin{array}{r} 50 \\ 9 \overline{) 450} \\ \underline{450} \\ 0 \end{array}$$

$$\begin{array}{r} 97 \\ 2 \overline{) 195} \\ \underline{180} \\ 15 \\ \underline{14} \\ 1 \end{array}$$

$$\begin{array}{r} 81 \\ 4 \overline{) 325} \\ \underline{320} \\ 5 \\ \underline{4} \\ 1 \end{array}$$

$$\begin{array}{r} 42 \\ 5 \overline{) 213} \\ \underline{200} \\ 13 \\ \underline{10} \\ 3 \end{array}$$

$$\begin{array}{r} 39 \\ 7 \overline{) 279} \\ \underline{210} \\ 69 \\ \underline{63} \\ 6 \end{array}$$

$$\begin{array}{r} 59 \\ 6 \overline{) 357} \\ \underline{300} \\ 57 \\ \underline{54} \\ 3 \end{array}$$

$$\begin{array}{r} 79 \\ 9 \overline{) 716} \\ \underline{630} \\ 86 \\ \underline{81} \\ 5 \end{array}$$

$$\begin{array}{r} 256 \\ 8 \overline{) 2054} \\ \underline{1600} \\ 454 \\ \underline{400} \\ 54 \\ \underline{48} \\ 6 \end{array}$$

$$\begin{array}{r} 984 \\ 5 \overline{) 4920} \\ \underline{4500} \\ 420 \\ \underline{400} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

$$\begin{array}{r} 914 \\ 7 \overline{) 6399} \\ \underline{6300} \\ 99 \\ \underline{70} \\ 29 \\ \underline{28} \\ 1 \end{array}$$

$$\begin{array}{r} 877 \\ 5 \overline{) 4386} \\ \underline{4000} \\ 386 \\ \underline{350} \\ 36 \\ \underline{35} \\ 1 \end{array}$$

$$\begin{array}{r} 98 \\ 20 \overline{) 1965} \\ \underline{1800} \\ 165 \\ \underline{160} \\ 5 \end{array}$$

$$\begin{array}{r} 96 \\ 40 \overline{) 3850} \\ \underline{3600} \\ 250 \\ \underline{240} \\ 10 \end{array}$$

$$\begin{array}{r} 90 \\ 90 \overline{) 8111} \\ \underline{8100} \\ 11 \end{array}$$

$$\begin{array}{r} 78 \\ 50 \overline{) 3923} \\ \underline{3500} \\ 428 \\ \underline{400} \\ 23 \end{array}$$

$$\begin{array}{r} 5 \\ 29 \overline{) 158} \\ \underline{145} \\ 13 \end{array}$$

$$\begin{array}{r} 8 \\ 62 \overline{) 509} \\ \underline{496} \\ 13 \end{array}$$

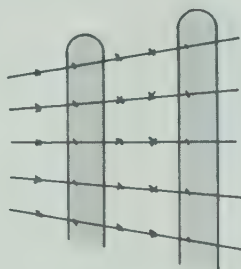
$$\begin{array}{r} 8 \\ 66 \overline{) 585} \\ \underline{528} \\ 57 \end{array}$$

$$\begin{array}{r} 92 \\ 71 \overline{) 6549} \\ \underline{6390} \\ 159 \\ \underline{142} \\ 17 \end{array}$$

1. The distance around a square field is 224 m. How long is one side of the

field? 56 m

2. The fence around the field is made of 5 wires. How many metres of wire were needed to make the fence? 1120 m



3. Five fasteners were needed on each post to fasten the wires. If 260 fasteners were used in all, how many posts were there? 52

Short Stories.

1. 1422 bottles.
6 in each carton.

How many cartons? 237

2. 168 children.
Each bus holds 42.

How many buses? 4

3. 30 trees in each row.
54 rows of trees.

How many trees? 1620

4. Drive 265 km in
5 hours. About how
many km each hour? 53 km

4. If the wire costs 18¢ each metre, what does it cost to buy one piece of wire that will go all the way around

the field? \$40.32

5. How much does it cost to buy the 5 wires needed to make the fence all

the way around the field? \$201.60

6. At the store there were 192 posts placed in piles of 24 posts each. How

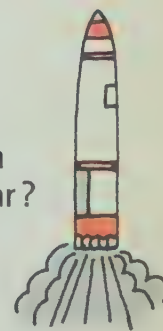
many piles of posts were there? 8

7. It took 168 hours for the men to build the fence. How many 24-hour

periods is this? 7

5. Drive an average of 88 km an hour. Drive 8 hours. How far?

724 km



6. Rocket to the moon. Took four 24-hour days. How many hours? 96 h

7. 288 marbles. Put 30 in each bag.

How many bags? 9

How many extra marbles? 18

8. 108 eggs. Put 12 in each carton.

How many cartons? 9

1. Find the quotients and remainders. Check your work.

A
$$\begin{array}{r} 22 \\ 3 \overline{) 67} \\ \underline{60} \\ 7 \\ \underline{6} \\ 1 \end{array}$$
 Check
$$\begin{array}{r} 22 \\ \times 3 \\ \hline 66 \\ + 1 \\ \hline 67 \end{array}$$

B
$$\begin{array}{r} 76 \\ 4 \overline{) 306} \\ \underline{280} \\ 26 \\ \underline{24} \\ 2 \end{array}$$
 Check
$$\begin{array}{r} 76 \\ \times 4 \\ \hline 304 \\ + 2 \\ \hline 306 \end{array}$$

C
$$\begin{array}{r} 327 \\ 7 \overline{) 2225} \\ \underline{2100} \\ 195 \\ \underline{140} \\ 55 \\ \underline{49} \\ 6 \end{array}$$
 Check
$$\begin{array}{r} 327 \\ \times 7 \\ \hline 2289 \\ + 6 \\ \hline 2295 \end{array}$$

2. Find the average of the numbers in each set.

A {10, 8, 14, 12} 11

B {60, 84, 71, 55, 65} 67

C {96, 48} 72

3. Find the quotients and remainders.

A
$$\begin{array}{r} 9 \\ 40 \overline{) 375} \\ \underline{360} \\ 15 \end{array}$$

B
$$\begin{array}{r} 7 \\ 92 \overline{) 725} \\ \underline{644} \\ 81 \end{array}$$

C
$$\begin{array}{r} 3 \\ 64 \overline{) 196} \\ \underline{192} \\ 4 \end{array}$$

D
$$\begin{array}{r} 84 \\ 71 \overline{) 5983} \\ \underline{5680} \\ 303 \\ \underline{284} \\ 19 \end{array}$$

4. 174 sheets of paper were divided equally among the children in the class.

If there were 29 children, how many sheets did each child receive? 6

CHANGE OF PACE

Work the puzzle.

Across

1. Add 96 to 87
3. 5 fives
5. 83×83
7. 5 less than 50
9. 1 less than 7×5
10. Number of hours in a day
12. Half of 42
14. 326×18
16. 4×10
17. 1 more than 99

Down

1. A dozen dozen
2. $72 \div 2$
3. 7×406
4. Less than 60, greater than 58
6. $498 \div 6$
8. 2640×2
11. $(4 \times 10) + 6$
13. 10×10
14. 9×6 or 6×9
15. $179 - 98$

1 1	8	2 3		3 2	4 5
4		5 6	6 8	8	9
7 4	8 5		9 3	4	
	10 2	11 4		12 2	13 1
14 5	8	6	15 8		0
16 4	0		17 1	0	0

1. In each exercise, complete the multiplication equations by giving the missing factors.
Do not use the same number in more than one equation in an exercise.

A $1 \times 16 = 16$

$2 \times 8 = 16$

$4 \times 4 = 16$

The factors of 16 are

1, 16, 2, 8, 4

B $1 \times 20 = 20$

$2 \times 10 = 20$

$4 \times 5 = 20$

The factors of 20 are

1, 2, 4, 5, 10, 20

C $1 \times 9 = 9$

$3 \times 3 = 9$

The factors of 9 are

1, 3, 9

D $1 \times 12 = 12$

$2 \times 6 = 12$

$3 \times 4 = 12$

The factors of 12 are

1, 2, 3, 4, 6, 12

E $1 \times 27 = 27$

$3 \times 9 = 27$

The factors of 27 are

1, 3, 9, 27

F $1 \times 18 = 18$

$2 \times 9 = 18$

$3 \times 6 = 18$

The factors of 18 are

1, 2, 3, 6, 9, 18

G $1 \times 24 = 24$

$2 \times 12 = 24$

$3 \times 8 = 24$

$4 \times 6 = 24$

The factors of 24 are

1, 2, 3, 4, 6, 8, 12, 24

H $1 \times 30 = 30$

$2 \times 15 = 30$

$3 \times 10 = 30$

$5 \times 6 = 30$

The factors of 30 are

1, 2, 3, 5, 6, 10, 15, 30

I $1 \times 36 = 36$

$2 \times 18 = 36$

$3 \times 12 = 36$

$4 \times 9 = 36$

$6 \times 6 = 36$

The factors of 36 are

1, 2, 3, 4, 6, 9, 12, 18, 36

2. A The factors of 14 are 1, 2, 7, 14. B The factors of 32 are 1, 2, 4, 8, 16, 32.

1. Draw lines connecting the **common factors** of the 2 numbers.
Then give the **greatest common factor** of the 2 numbers.

A Factors of : {1, 2, 4, 8}

Factors of 12: {1, 2, 3, 4, 6, 12}

The **greatest common factor** of
8 and 12 is 4.

B Factors of 12: {1, 2, 3, 4, 6, 12}

Factors of 18: {1, 2, 3, 6, 9, 18}

The **greatest common factor** of
12 and 18 is 6.

2. List the factors of the two numbers. Then follow the directions of exercise 1.

A Factors of 10: {1, 2, 5, 10}

Factors of 15: {1, 3, 5, 15}

The **greatest common factor** of
10 and 15 is 5.

B Factors of 18: {1, 2, 3, 6, 9, 18}

Factors of 24: {1, 2, 3, 4, 6, 8, 12, 24}

The **greatest common factor** of
18 and 24 is 6.

C Factors of 12: {1, 2, 3, 4, 6, 12}

Factors of 16: {1, 2, 4, 8, 16}

The **greatest common factor** of
12 and 16 is 4.

D Factors of 12: {1, 2, 3, 4, 6, 12}

Factors of 30: {1, 2, 3, 5, 6, 10, 15, 30}

The **greatest common factor** of
12 and 30 is 6.

E Factors of 9: {1, 3, 9}

Factors of 27: {1, 3, 9, 27}

The **greatest common factor** of
9 and 27 is 9.

F Factors of 24: {1, 2, 3, 4, 5, 6, 8, 12, 24}

Factors of 32: {1, 2, 4, 8, 16, 32}

The **greatest common factor** of
24 and 32 is 8.

G Factors of 32: {1, 2, 4, 8, 16, 32}

Factors of 48: {1, 2, 3, 4, 6, 8, 12, 16, 24, 48}

The **greatest common factor** of
32 and 48 is 16.

H Factors of 16: {1, 2, 4, 8, 16}

Factors of 27: {1, 3, 9, 27}

The **greatest common factor**
of 16 and 27 is 1.

1. List all the factors of each number.

A Factors of 1: 1

N Factors of 14: 1, 2, 7, 14

B Factors of 2: 1, 2

O Factors of 15: 1, 3, 5, 15

C Factors of 3: 1, 3

P Factors of 16: 1, 2, 4, 8, 16

D Factors of 4: 1, 2, 4

Q Factors of 17: 1, 17

E Factors of 5: 1, 5

R Factors of 18: 1, 2, 3, 6, 9, 18

F Factors of 6: 1, 2, 3, 6

S Factors of 19: 1, 19

G Factors of 7: 1, 7

T Factors of 20: 1, 2, 4, 5, 10, 20

H Factors of 8: 1, 2, 4, 8

U Factors of 21: 1, 3, 7, 21

I Factors of 9: 1, 3, 9

V Factors of 22: 1, 2, 11, 22

J Factors of 10: 1, 2, 5, 10

W Factors of 23: 1, 23

K Factors of 11: 1, 11

X Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24

L Factors of 12: 1, 2, 3, 4, 6, 12

Y Factors of 25: 1, 5, 25

M Factors of 13: 1, 13

Z Factors of 26: 1, 2, 13, 26

2. Which number in exercise 1 has **just one factor**? 1

3. Which of the numbers in exercise 1 have **exactly two factors**?

2, 3, 5, 7, 11, 13, 17, 19, 23

4. Whole numbers that have **exactly two factors**, the number itself and 1, are called **prime numbers**.

List all the prime numbers less than 26. 2, 3, 5, 7, 11, 13, 17, 19, 23

5. A Are there any prime numbers between 25 and 30? yes

B List the prime numbers between 25 and 30. 29

6. Whole numbers greater than 1 that have **more than 2 factors** are called **composite numbers**. List the composite numbers less than 30.

4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 24, 25, 26, 27, 28

7. Which prime number is an even number? 2

1. Write the missing numbers.

A $1 \times \boxed{42} = 42$

$2 \times \boxed{21} = 42$

$3 \times \boxed{14} = 42$

$6 \times \boxed{7} = 42$

B Factors of 42: 1, 2, 3, 6, 7, 14, 21, 42

2. List all the factors of each number.

A Factors of 25: 1, 5, 25

B Factors of 28: 1, 2, 4, 7, 14, 28

C Factors of 31: 1, 31

D Factors of 33: 1, 3, 11, 33

E Factors of 45: 1, 3, 5, 9, 15, 45

F Which one of the numbers above is a **prime number**? 31

3. A Factors of 18: 1, 2, 3, 6, 9, 18

B Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30

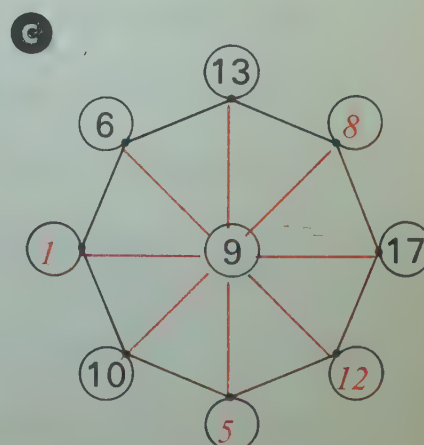
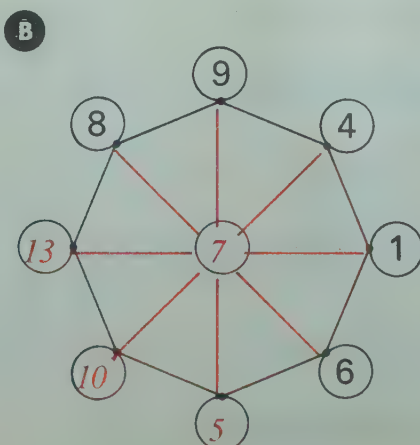
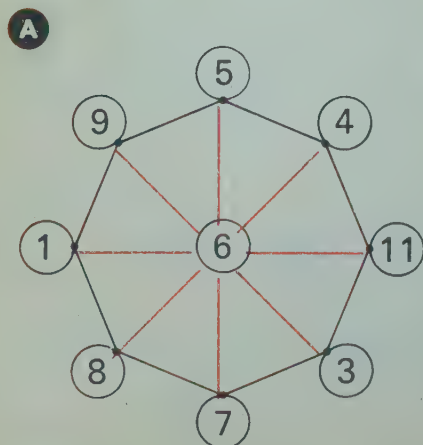
C The common factors of 18 and 30 are 1, 2, 3, 6.

D The **greatest common factor** of 18 and 30 is 6.

4. What is the greatest common factor of 28 and 42? 14

CHANGE OF PACE

An 8-sided figure is called an **octagon**. Figure A below is a Magic Octagon because each set of 3 numbers along a colored line has the same sum. Check this. Also, the number in the middle is the average of the 3 numbers on any one colored line. Use this information to make each figure below a Magic Octagon.



Study exercise 1. Then complete exercises 2 through 6.

We think about a pair of numbers.

We write a fraction for the number pair.

1.

3 parts are colored.
4 parts in all.



3 out of 4 parts are colored.
 $\frac{3}{4}$ of the region is colored.
Read: "three-fourths" for $\frac{3}{4}$.

2. 1 part is colored.

3 parts in all.



1 out of 3 parts are colored.
 $\frac{1}{3}$ of the region is colored.

3. 5 balls are black.

6 balls in all.



5 out of 6 balls are black.
 $\frac{5}{6}$ of the balls are black.

4. 2 apples have worms.

5 apples in all.



2 out of 5 apples have worms.
 $\frac{2}{5}$ of the apples have worms.

5. 2 pieces of pie have been eaten.

6 pieces at the beginning.



2 out of 6 pieces have been eaten.
 $\frac{2}{6}$ of the pie has been eaten.

6. 3 plants have blossoms on them.

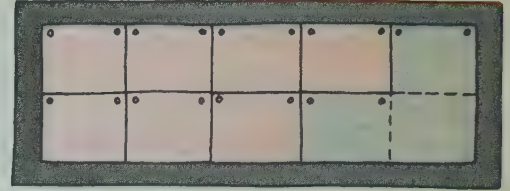
10 plants in all.



3 out of 10 plants have blossoms on them.
 $\frac{3}{10}$ of the plants have blossoms on them.

Read each story carefully. Then complete the sentence by writing a fraction in each blank.

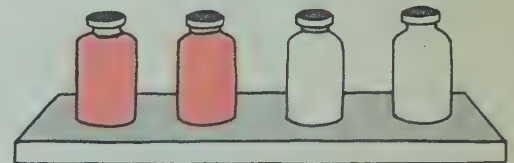
1. The children were covering the bulletin board with sheets of paper. There was room for 10 sheets. When they had tacked up 7 sheets, $\frac{7}{10}$ of the bulletin board was covered.



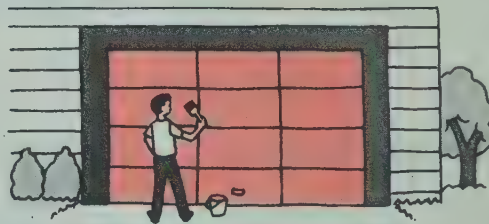
2. There were 5 children on a committee. 3 of them were girls. $\frac{3}{5}$ of the children were girls.



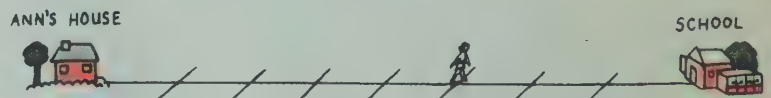
3. There were 4 jars on a shelf. 2 of them were full of juice. $\frac{2}{4}$ of the jars were full of juice.



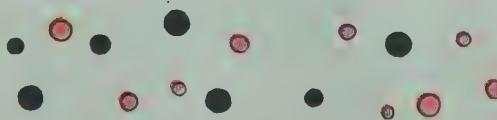
4. Jack was painting a garage door. He had painted 9 panels. There were 12 panels in all. He had painted $\frac{9}{12}$ of the door.



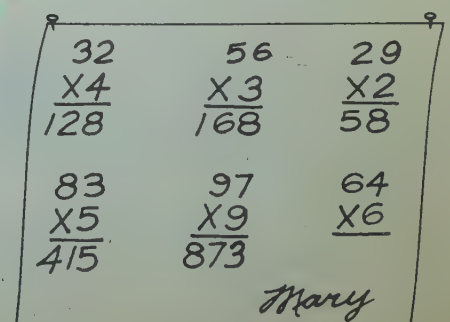
5. Ann was walking to school. She had walked 5 blocks. It was 8 blocks from her house to school. Ann had walked $\frac{5}{8}$ of the way to school.



6. Sam had 16 marbles. 7 of them were black. $\frac{7}{16}$ of the marbles were black.



7. Mary completed 5 out of 6 problems. She completed $\frac{5}{6}$ of her problems.



A



This peppermint stick was cut into 3 pieces.

The boy is taking 1 piece.

The boy is taking $\frac{1}{3}$ of the peppermint stick.

B



This peppermint stick was cut into 3 pieces.

The boy is taking 1 piece.

Is this boy taking $\frac{1}{3}$ of the peppermint stick? no

Answer **true** or **false** for each exercise.

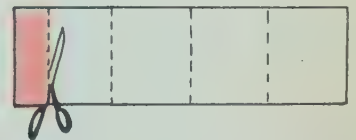
1. $\frac{1}{2}$ of stick is colored. False



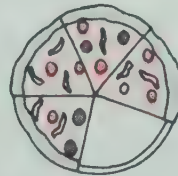
2. $\frac{1}{4}$ of the pie has been eaten. True



3. $\frac{1}{5}$ of the sheet of paper is being cut off. False



4. $\frac{4}{5}$ of the pizza is left. True



5. $\frac{3}{4}$ of the circle is colored. False



6. $\frac{1}{7}$ of the region is shaded. True



7. $\frac{2}{3}$ of the cake has icing on top. True



8. $\frac{5}{6}$ of the region is shaded. True

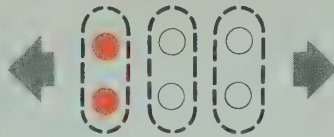


Study the examples. Give the missing numbers.

A 2 of the dots are colored.

6 dots in all.

$\frac{2}{6}$ of the dots are colored.



1 set has colored dots.

3 sets in all.

$\frac{1}{3}$ of the dots are colored.

Since $\frac{2}{6}$ and $\frac{1}{3}$ can both be used to compare the colored dots with all the dots,

we say $\frac{2}{6}$ is equivalent to $\frac{1}{3}$.

B 1 part out of 4 parts is colored.

$\frac{1}{4}$ of the region is colored.



2 parts out of 8 parts are colored.

$\frac{2}{8}$ of the region is colored.

Since $\frac{1}{4}$ and $\frac{2}{8}$ can both be used to compare the colored part with the whole region,

we say $\frac{1}{4}$ is equivalent to $\frac{2}{8}$.

Give the missing numbers.

1. 2 out of 3 parts are colored.

$\frac{2}{3}$ of the region is colored.



4 out of 6 parts are colored.

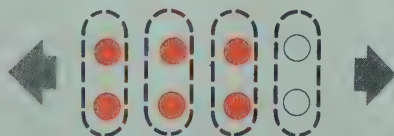
$\frac{4}{6}$ of the region is colored.

$\frac{2}{3}$ is equivalent to $\frac{4}{6}$.

2. 6 dots are colored.

8 dots in all.

$\frac{6}{8}$ of the dots are colored.



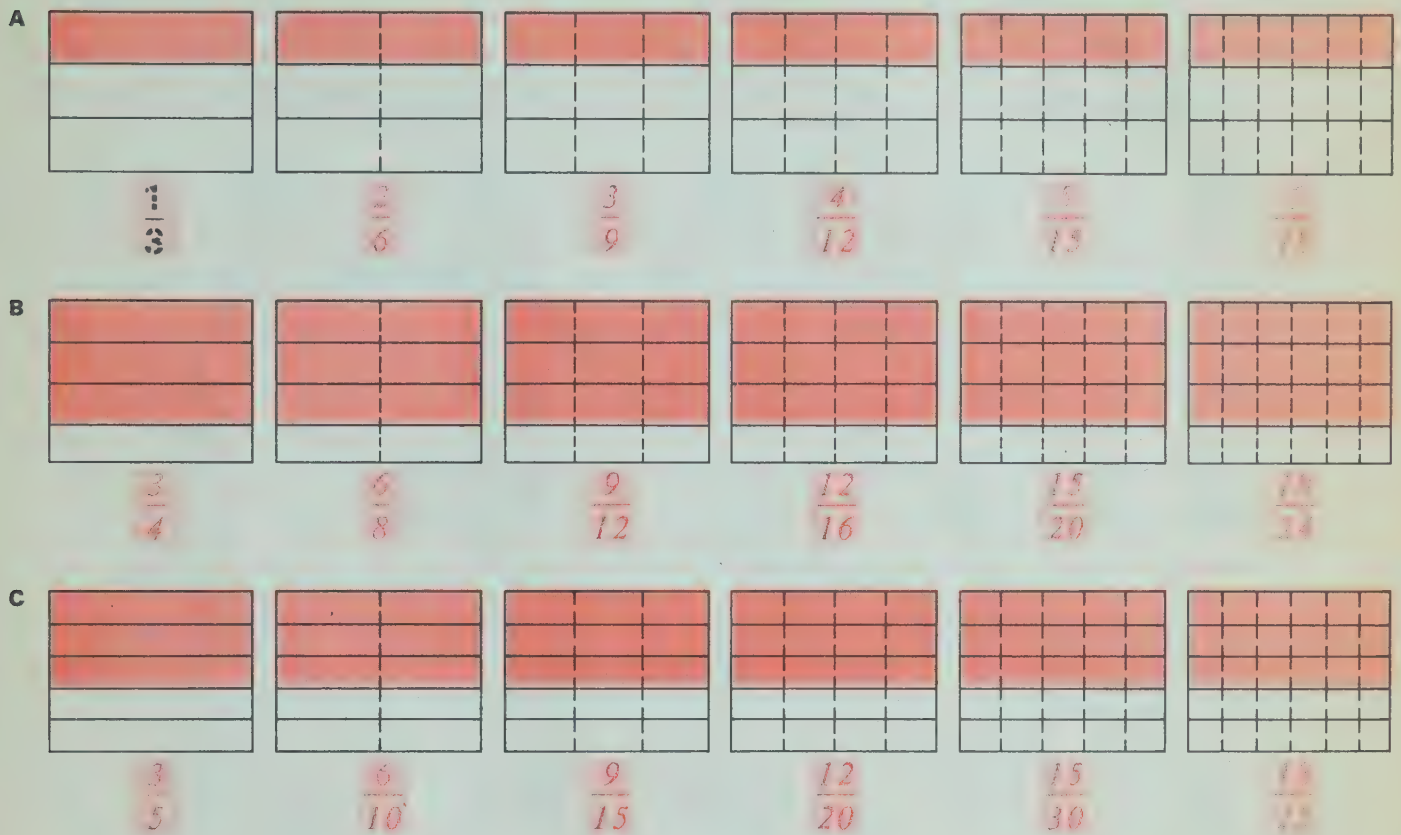
3 sets have colored dots.

4 sets in all.

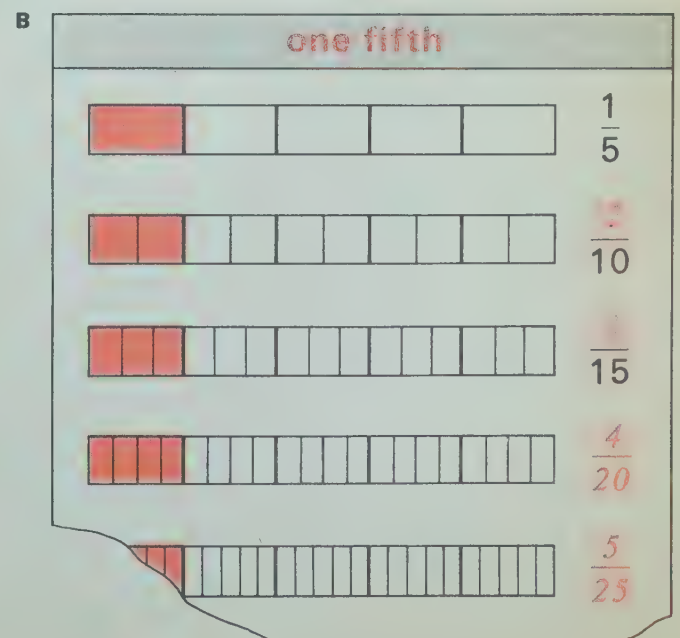
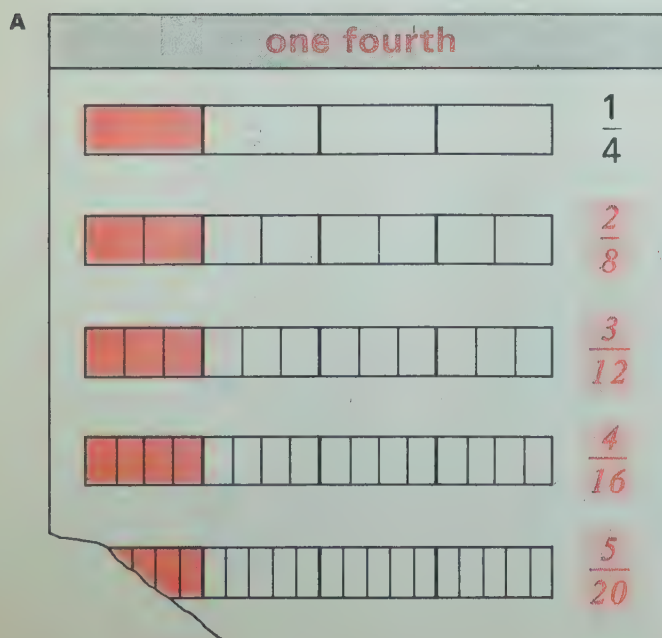
$\frac{3}{4}$ of the dots are colored.

$\frac{6}{8}$ is equivalent to $\frac{3}{4}$.

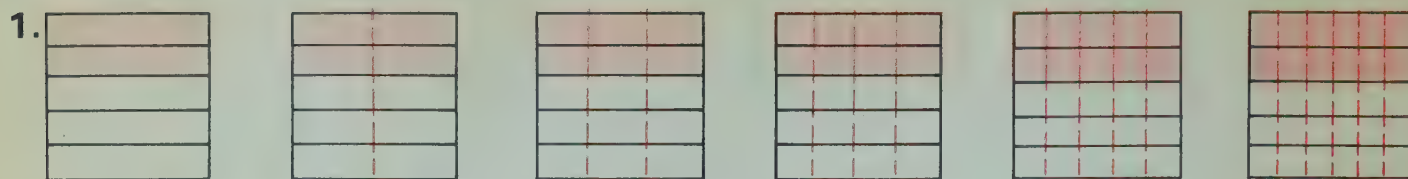
1. In each row the fractions suggested by the figures are equivalent to each other. Write these fractions.



2. In the charts below, write fractions that show what part of the bar is shaded. Each fraction you write in chart A should be equivalent to $\frac{1}{4}$. Each fraction you write in chart B should be equivalent to $\frac{1}{5}$.



Write the missing fractions in each exercise.



$$\frac{1 \times 2}{1 \times 5}$$

$$\downarrow$$

$$\frac{2}{5}$$

$$\frac{2 \times 2}{2 \times 5}$$

$$\downarrow$$

$$\frac{4}{10}$$

$$\frac{3 \times 2}{3 \times 5}$$

$$\downarrow$$

$$\frac{6}{15}$$

$$\frac{4 \times 2}{4 \times 5}$$

$$\downarrow$$

$$\frac{8}{20}$$

$$\frac{5 \times 2}{5 \times 5}$$

$$\downarrow$$

$$\frac{10}{25}$$

$$\frac{6 \times 2}{6 \times 5}$$

$$\downarrow$$

$$\frac{12}{30}$$

2. $\frac{1 \times 2}{1 \times 7}$

$$\downarrow$$

$$\frac{2}{7}$$

$$\frac{2 \times 3}{2 \times 7}$$

$$\downarrow$$

$$\frac{6}{14}$$

$$\frac{3 \times 3}{3 \times 7}$$

$$\downarrow$$

$$\frac{9}{21}$$

$$\frac{4 \times 3}{4 \times 7}$$

$$\downarrow$$

$$\frac{12}{28}$$

$$\downarrow$$

$$\frac{15}{35}$$

$$\downarrow$$

$$\frac{18}{42}$$

$$\downarrow$$

$$\frac{21}{49}$$

$$\downarrow$$

$$\frac{24}{56}$$

3. $\frac{1 \times 5}{1 \times 6}$

$$\downarrow$$

$$\frac{5}{6}$$

$$\frac{2 \times 5}{2 \times 6}$$

$$\downarrow$$

$$\frac{10}{12}$$

$$\frac{3 \times 5}{3 \times 6}$$

$$\downarrow$$

$$\frac{15}{18}$$

$$\frac{4 \times 5}{4 \times 6}$$

$$\downarrow$$

$$\frac{20}{24}$$

$$\downarrow$$

$$\frac{25}{30}$$

$$\downarrow$$

$$\frac{30}{36}$$

$$\downarrow$$

$$\frac{35}{42}$$

$$\downarrow$$

$$\frac{40}{48}$$

4. $\left\{ \frac{2}{3}, \frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}, \frac{12}{18}, \dots \right\}$

5. $\left\{ \frac{1}{5}, \frac{2}{10}, \frac{3}{15}, \frac{4}{20}, \frac{5}{25}, \frac{6}{30}, \dots \right\}$

6. $\left\{ \frac{5}{10}, \frac{10}{20}, \frac{15}{30}, \frac{20}{40}, \frac{25}{50}, \frac{30}{60}, \dots \right\}$

7. $\left\{ \frac{2}{7}, \frac{4}{14}, \frac{6}{21}, \frac{8}{28}, \frac{10}{35}, \frac{12}{42}, \dots \right\}$

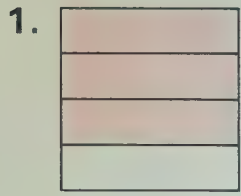
8. $\left\{ \frac{7}{10}, \frac{14}{20}, \frac{21}{30}, \frac{28}{40}, \frac{35}{50}, \frac{42}{60}, \dots \right\}$

9. $\left\{ \frac{4}{9}, \frac{8}{18}, \frac{12}{27}, \frac{16}{36}, \frac{20}{45}, \frac{24}{54}, \dots \right\}$

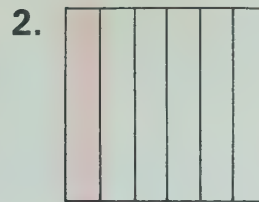
10. $\left\{ \frac{3}{7}, \frac{6}{14}, \frac{9}{21}, \frac{12}{28}, \frac{15}{35}, \frac{18}{42}, \dots \right\}$

11. $\left\{ \frac{5}{8}, \frac{10}{16}, \frac{15}{24}, \frac{20}{32}, \frac{25}{40}, \frac{30}{48}, \dots \right\}$

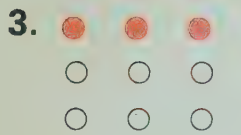
Write the correct **numerator** or **denominator** in each



$\frac{3}{4}$ ← Numerator
← Denominator



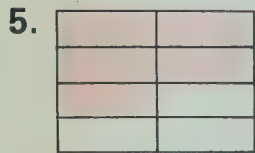
$\frac{1}{6}$ ← Numerator
← Denominator



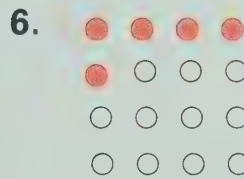
$\frac{3}{9}$ ← Numerator
← Denominator



$\frac{3}{10}$ ← Numerator
← Denominator



$\frac{5}{8}$ ← Numerator
← Denominator



$\frac{5}{16}$ ← Numerator
← Denominator

7. The denominator is twice the numerator.

$\frac{7}{14}$ ← Numerator
← Denominator

8. The numerator is 3 less than half of the denominator.

$\frac{1}{8}$ ← Numerator
← Denominator

9. The denominator is one more than 6 times the numerator.

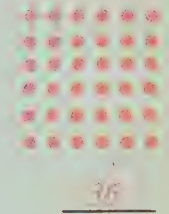
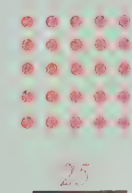
$\frac{3}{19}$ ← Numerator
← Denominator

CHANGE OF PACE

1. Each group of dots below shows a triangular number. Draw dots to show the next three triangular numbers.



2. Draw dots to show the next three square numbers.



3. Write the correct triangular numbers in the blanks.

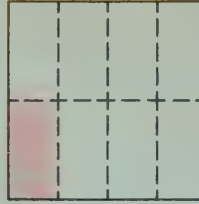
$$\frac{1}{10} + \frac{3}{15} = 4$$

$$\frac{3}{15} + \frac{6}{21} = 9$$

$$\frac{6}{21} + \frac{10}{28} = 16 \quad (\text{or } 1 + 15)$$

1. Write the missing fractions.

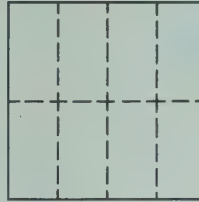
- A We use fractions to compare a part of an object (or unit) with the whole object or unit.



The shaded region is $\frac{1}{8}$ of the square.

OR

- B We can use fractions to compare one object (or unit) with another object or unit.



Region $ABCD$ is $\frac{1}{8}$ the size of the square.

2. Write the missing fractions.

- A We use fractions to compare a part of a segment with the whole segment.



\overline{AC} is $\frac{1}{3}$ of \overline{AB} .

OR

- B We can use fractions to compare one segment with another segment.



\overline{CD} is $\frac{1}{3}$ as long as \overline{AB} .

3. Write the missing fractions for each comparison.



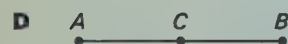
The shaded region is $\frac{1}{4}$ of the square centimetre.



Region $ABCD$ is $\frac{1}{4}$ the size of the square centimetre.



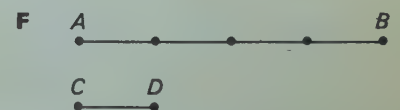
Region $ABCDEF$ is $\frac{3}{4}$ the size of the square centimetre.



Segment AC is $\frac{1}{2}$ of the segment AB .



Segment EF is $\frac{1}{2}$ as long as segment AB .



Segment CD is $\frac{1}{4}$ as long as segment AB .

Fractions are often used to compare an object with a unit, such as a centimetre. Fractions with the numerator equal to or greater than the denominator are often used for such comparisons. Give the missing numbers or fractions.

1. Unit

A

B

C

D

E

F

We use the fraction $\frac{1}{3}$ to compare rod A with the unit.

We use the fraction $\frac{2}{3}$ to compare rod B with the unit.

We use the fraction $\frac{3}{3}$ to compare rod C with the unit.

For rod D, we use the fraction $\frac{4}{3}$.

For rod E, we use the fraction $\frac{5}{3}$.

For rod F, we use the fraction $\frac{6}{3}$.

2. Unit

$\frac{1}{4}$

$\frac{3}{4}$

$\frac{4}{4}$

$\frac{5}{4}$

$\frac{6}{4}$

$\frac{7}{4}$

$\frac{8}{4}$

3. Unit

$\frac{1}{5}$

$\frac{2}{5}$

$\frac{3}{5}$

$\frac{4}{5}$

$\frac{5}{5}$

$\frac{6}{5}$

$\frac{7}{5}$

4. Unit

Unit

$\frac{1}{2}$

$\frac{2}{2}$

$\frac{3}{2}$

$\frac{4}{2}$

5. Fractions with numerator equal to or greater than the denominator are sometimes called **improper fractions**. Ring the **improper fractions** in the list.

$\frac{2}{3}$, $\frac{3}{2}$, $\frac{2}{2}$, $\frac{5}{3}$, $\frac{1}{9}$, $\frac{7}{7}$, $\frac{9}{5}$

● Checking to See if Two Fractions are Equivalent

Find the products. Put a ring around **equivalent** or **not equivalent** to make the sentence true.

Remember: If the two "cross products" are the same, then the fractions are **equivalent**.

1. $\frac{2}{3}$ and $\frac{6}{9}$ → $3 \times 6 = 18$
 $2 \times 9 = 18$ → $\frac{2}{3}$ is **equivalent** not equivalent to $\frac{6}{9}$.

2. $\frac{5}{8}$ and $\frac{3}{4}$ → $8 \times 3 = 24$
 $5 \times 4 = 20$ → $\frac{5}{8}$ is **equivalent** **not equivalent** to $\frac{3}{4}$.

3. $\frac{7}{10}$ and $\frac{4}{5}$ → $10 \times 4 = 40$
 $7 \times 5 = 35$ → $\frac{7}{10}$ is **equivalent** **not equivalent** to $\frac{4}{5}$.

4. $\frac{3}{10}$ and $\frac{10}{37}$ → $10 \times 10 = 100$
 $3 \times 37 = 111$ → $\frac{3}{10}$ is **equivalent** **not equivalent** to $\frac{10}{37}$.

5. $\frac{0}{6}$ and $\frac{0}{12}$ → $6 \times 0 = 0$
 $0 \times 12 = 0$ → $\frac{0}{6}$ is **equivalent** not equivalent to $\frac{0}{12}$.

6. $\frac{5}{5}$ and $\frac{9}{9}$ → $5 \times 9 = 45$
 $5 \times 9 = 45$ → $\frac{5}{5}$ is **equivalent** not equivalent to $\frac{9}{9}$.

7. Circle the pair of fractions if they are equivalent fractions.

A $\frac{3}{8}, \frac{6}{9}$

B $\frac{2}{3}, \frac{8}{12}$

C $\frac{1}{5}, \frac{2}{9}$

D $\frac{1}{4}, \frac{5}{20}$

E $\frac{4}{4}, \frac{6}{6}$

F $\frac{1}{2}, \frac{50}{100}$

G $\frac{1}{2}, \frac{2}{1}$

H $\frac{0}{7}, \frac{0}{5}$

1. You have learned how to build a set of equivalent fractions from a lowest-terms fraction. Give the missing fractions.

$$\begin{array}{ccccccc} \frac{2}{3} & \rightarrow & \frac{2 \times 2}{2 \times 3} & \rightarrow & \frac{3 \times 2}{3 \times 3} & \rightarrow & \frac{4 \times 2}{4 \times 3} & \rightarrow & \frac{5 \times 2}{5 \times 3} & \rightarrow & \frac{6 \times 2}{6 \times 3} & \rightarrow & \frac{7 \times 2}{7 \times 3} \\ \downarrow & & \downarrow & & \downarrow & & \downarrow & & \downarrow & & \downarrow & & \downarrow \\ \left\{ \frac{2}{3}, \frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}, \frac{12}{18}, \frac{14}{21} \right\} \end{array}$$

2. In each exercise below a set of equivalent fractions was built as in exercise 1. In each write the **lowest-terms** fraction that was used to build the set.

A $\left\{ \frac{2}{3}, \frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \dots \right\}$

D $\left\{ \frac{3}{7}, \frac{6}{14}, \frac{9}{21}, \frac{12}{28}, \dots \right\}$

B $\left\{ \frac{3}{5}, \frac{6}{10}, \frac{9}{15}, \frac{12}{20}, \dots \right\}$

E $\left\{ \frac{1}{2}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}, \dots \right\}$

C $\left\{ \frac{3}{4}, \frac{6}{8}, \frac{9}{12}, \frac{15}{20}, \dots \right\}$

F $\left\{ \frac{5}{3}, \frac{15}{9}, \frac{20}{12}, \frac{25}{15}, \dots \right\}$

3. Each set is a set of **equivalent fractions**. Each set has one fraction that is in **lowest terms**. Ring that fraction.

A $\left\{ \frac{8}{12}, \frac{6}{9}, \frac{12}{18}, \frac{2}{3}, \frac{4}{6}, \frac{14}{21} \right\}$

E $\left\{ \frac{4}{3}, \frac{12}{9}, \frac{20}{15}, \frac{24}{18}, \frac{16}{12}, \frac{8}{6} \right\}$

B $\left\{ \frac{5}{6}, \frac{10}{12}, \frac{15}{18}, \frac{20}{24}, \frac{25}{30}, \frac{30}{36} \right\}$

F $\left\{ \frac{18}{42}, \frac{15}{35}, \frac{12}{28}, \frac{9}{21}, \frac{6}{14}, \frac{3}{7} \right\}$

C $\left\{ \frac{4}{14}, \frac{2}{7}, \frac{6}{21}, \frac{8}{28}, \frac{12}{42}, \frac{10}{35} \right\}$

G $\left\{ \frac{9}{24}, \frac{12}{32}, \frac{3}{8}, \frac{18}{48}, \frac{15}{40}, \frac{6}{16} \right\}$

D $\left\{ \frac{18}{30}, \frac{12}{20}, \frac{6}{10}, \frac{9}{15}, \frac{3}{5}, \frac{15}{25} \right\}$

H $\left\{ \frac{15}{20}, \frac{12}{40}, \frac{18}{60}, \frac{9}{30}, \frac{3}{10}, \frac{6}{20} \right\}$

1. Write the missing numbers and fractions.



4 parts are colored.

5 parts in all.

$\frac{4}{5}$ of the region is colored.



3 balls are black.

8 balls in all.

$\frac{3}{8}$ of the balls are black.

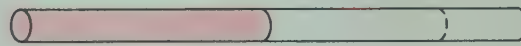


2 parts are colored.

6 parts in all.

$\frac{2}{6}$ of the region is colored.

2. Is $\frac{1}{3}$ of the rod colored? No



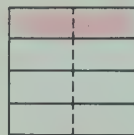
3. Are $\frac{1}{4}$ of the marbles colored? Yes



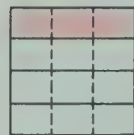
4. Write the fraction suggested by each figure.



$\frac{1}{4}$



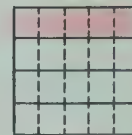
$\frac{2}{8}$



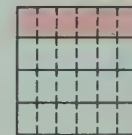
$\frac{3}{12}$



$\frac{4}{16}$



$\frac{5}{20}$



$\frac{6}{24}$

5. Are the two fractions $\frac{2}{3}$ and $\frac{4}{7}$ equivalent? No



6. Write the lowest-terms fraction that was used to build the following set of equivalent fractions.

$\left\{ \frac{1}{4}, \frac{2}{8}, \frac{3}{12}, \frac{4}{16}, \dots \right\}$


CHANGE OF PACE

- The number 12 345 679 is interesting. Find these products to see why.

A 12 345 679 $\times 9$ 111 111 111	B 12 345 679 $\times 18$ 222 222 222	C 12 345 679 $\times 27$ 333 333 333
---	--	--
- What do you think you could multiply 12 345 679 by to get the following products?

A 444 444 444 <u>36</u>	B 555 555 555 <u>45</u>	C 666 666 666 <u>54</u>
--------------------------------	--------------------------------	--------------------------------

Number pairs can show locations.

The  is "3 over and 5 up" on the graph.


The co-ordinates of the  are (3, 5).

1. Give the missing numbers.

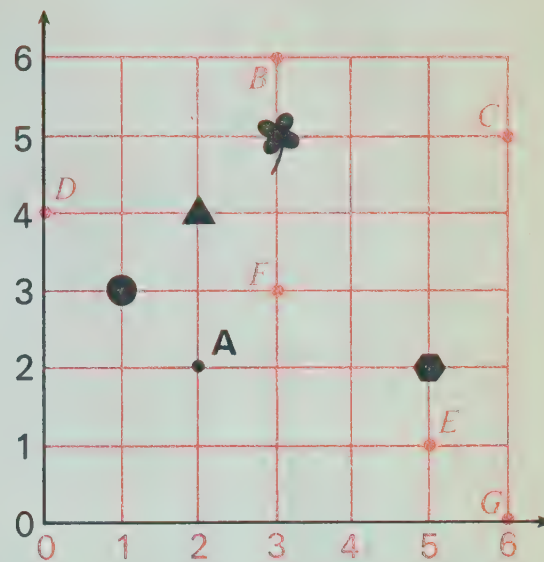
A The  is "2 over and 4 up."

B The  is 1 over and 3 up.

Its co-ordinates are (1, 3).

C The  is 5 over and 2 up.

Its co-ordinates are (5, 2).



2. Use the grid in exercise 1 to graph each of these points.

Write the letter beside it.

Example:

B (3, 6)

D (0, 4)

F (3, 3)

Graph letter A at (2, 2).

C (6, 5)

E (5, 1)

G (6, 0)

3. Draw a picture by graphing and connecting the points in the order given.

(4, 1) → (5, 2) → (5, 3) → (3, 3)

→ (1, 4) → (1, 6) → (0, 5)

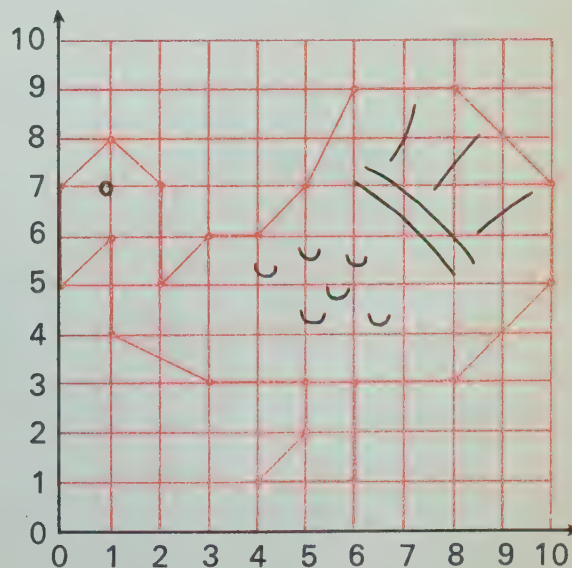
(0, 7) → (1, 8) → (2, 7) → (2, 5)

→ (3, 6) → (4, 6) → (5, 7) →

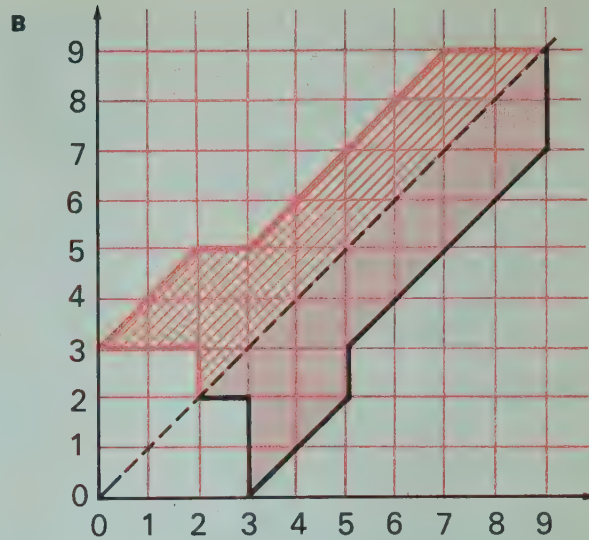
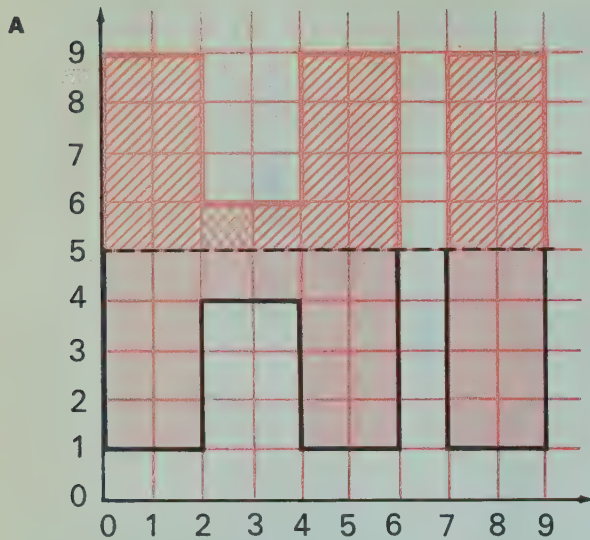
(6, 9) → (8, 9) → (10, 7) → (10, 5)

→ (8, 3) → (6, 3) → (6, 1) →

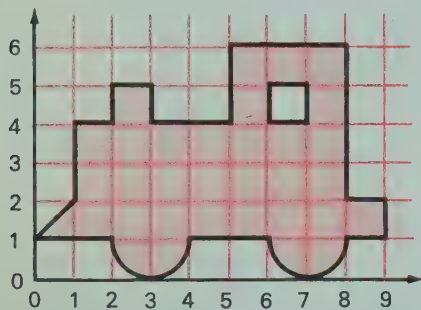
(4, 1).



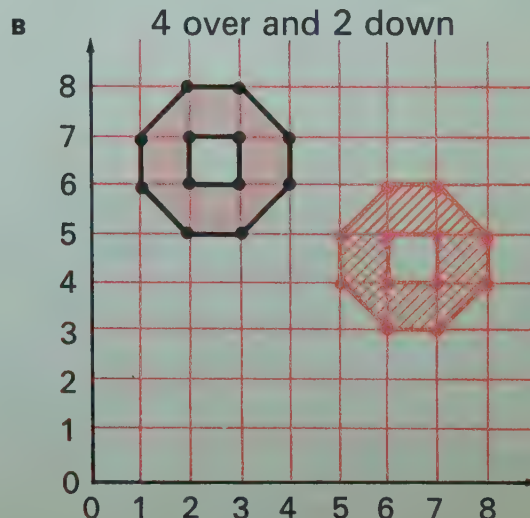
1. Draw the other half of each figure so that **symmetric** figures are formed.



2. Use the grid at the right to make a larger drawing of the figure below so that the two figures will be **similar**.



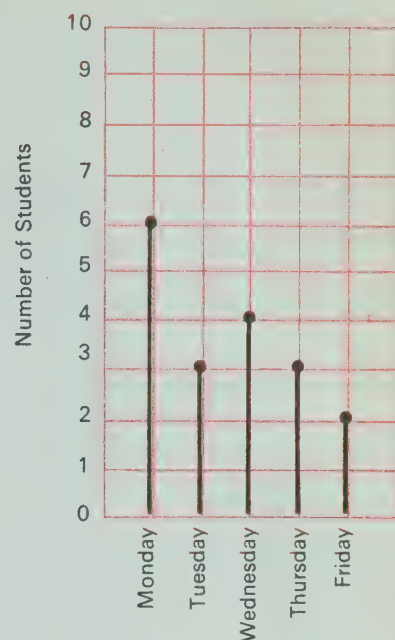
3. Use the move given and show the final position of each figure.



1. Use the graph at the right to answer each question below.

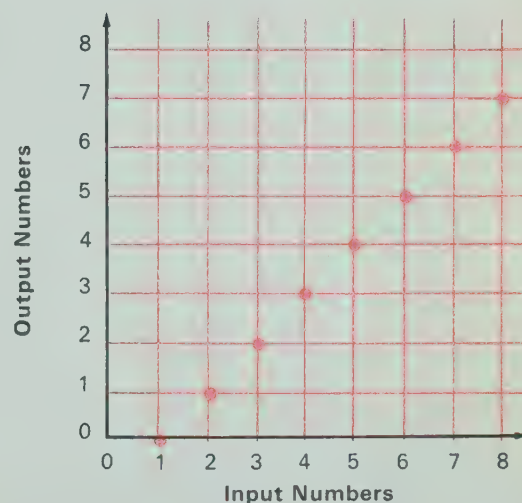
- A On which day were the most number of students absent? Monday
- B How many students were absent on Wednesday? 4
- C Which two days had the same number of absences? Tuesday, Thursday
- D What is the total number of absences for the week? 18

SCHOOL ABSENCES FOR ONE WEEK



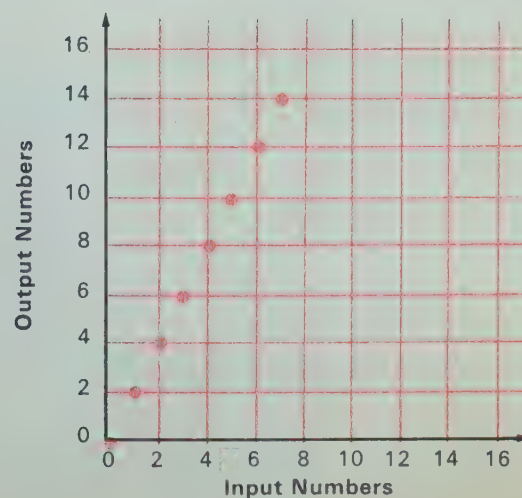
2. Complete the function tables. Then graph the number pairs on the grid.

Function Rule			
Subtract			
INPUT	OUTPUT	INPUT	OUTPUT
8	7	4	3
7	6	3	2
6	5	2	1
5	4	1	0



3. Complete the function tables. Then graph the number pairs on the grid.

Function Rule			
Multiply by 2			
INPUT	OUTPUT	INPUT	OUTPUT
0	0	4	8
1	2	5	10
2	4	6	12
3	6	7	14



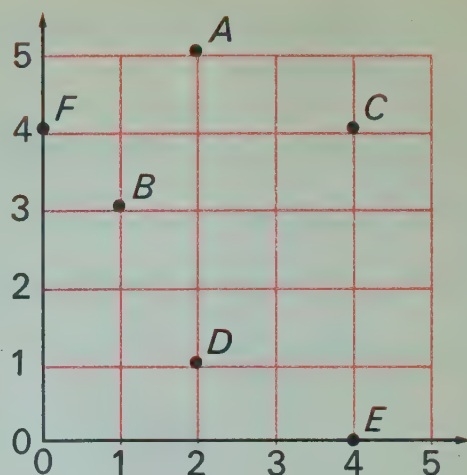
1. Give the correct number or letter in each blank.

A The letter *C* is 4 over and 4 up.

B The letter *D* is 2 over and 1 up.

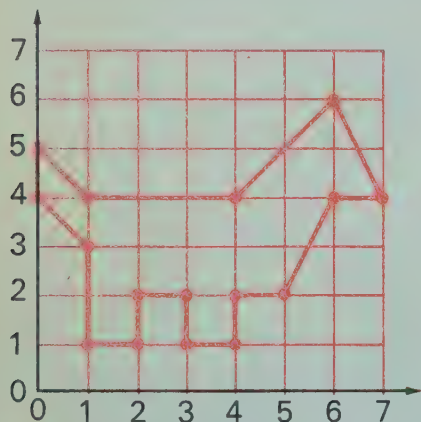
C The letter whose co-ordinates are (4, 0) is *E*.

D The co-ordinates of letter *B* are (1, 3).

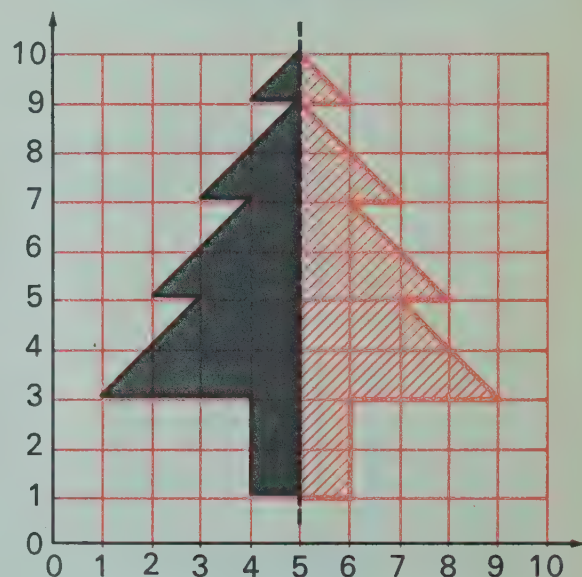


2. Graph and connect the points in the order given.

(3, 1) → (4, 1) → (4, 2) → (5, 2)
 → (6, 4) → (7, 4) → (6, 6) →
 (4, 4) → (1, 4) → (0, 5) → (0, 4)
 → (1, 3) → (1, 1) → (2, 1) →
 (2, 2) → (3, 2) → (3, 1).

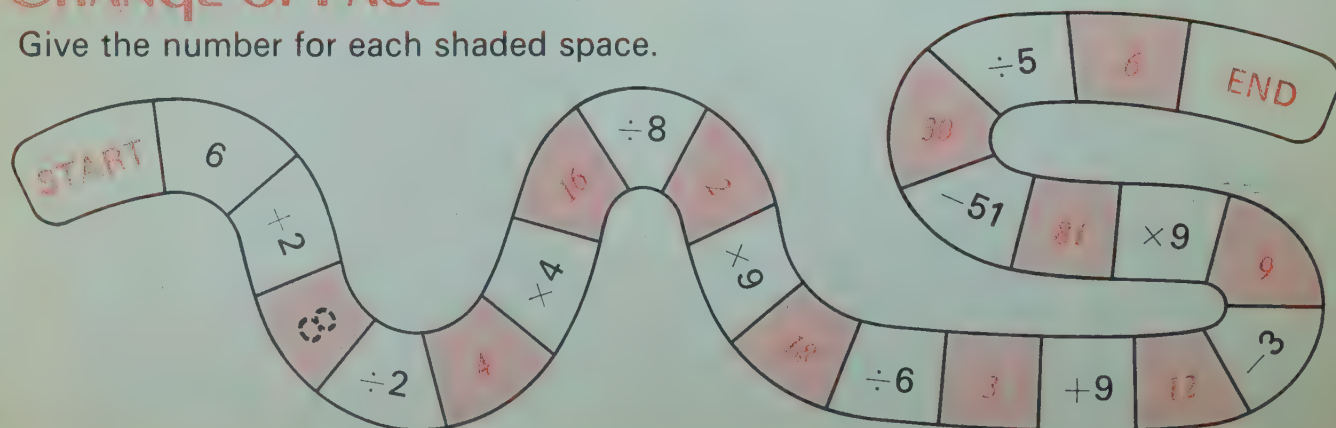


3. Draw the other half of the figure so that it will be **symmetric**.



CHANGE OF PACE

Give the number for each shaded space.



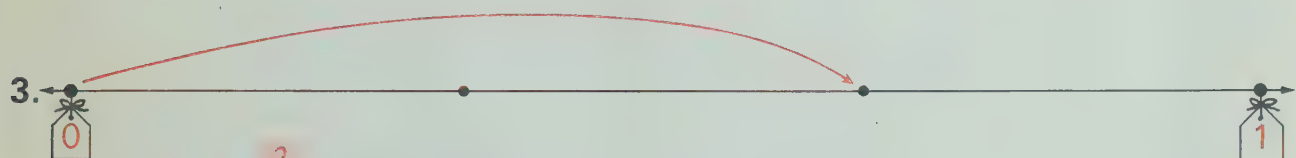
In each exercise below, two tags are tied on a wire. The arrow shows a cricket's jump. Write a fraction in each



The cricket has jumped $\frac{1}{2}$ of the way from the 0 tag to the 1 tag.



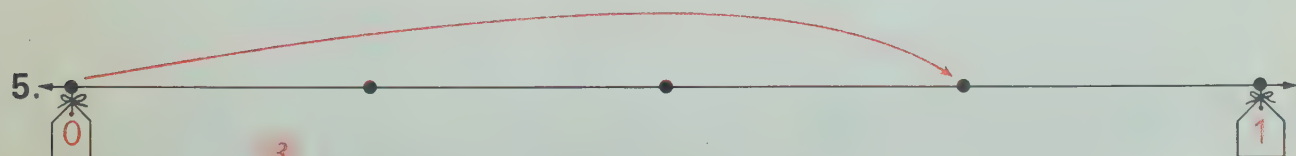
The jump is $\frac{1}{3}$ of the way from 0 to 1.



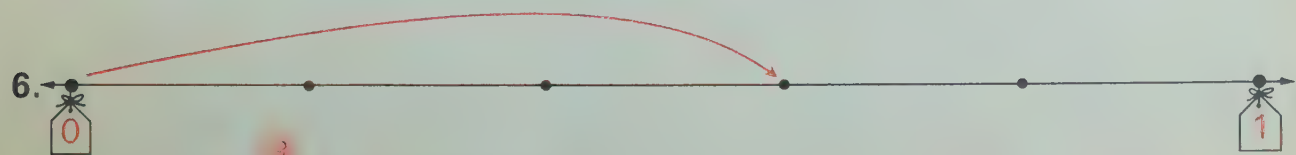
The jump is $\frac{2}{3}$ of the way from 0 to 1.



The jump is $\frac{1}{4}$ of the way from 0 to 1.



The jump is $\frac{3}{4}$ of the way from 0 to 1.

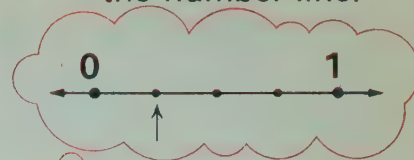
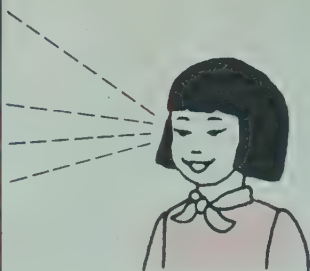
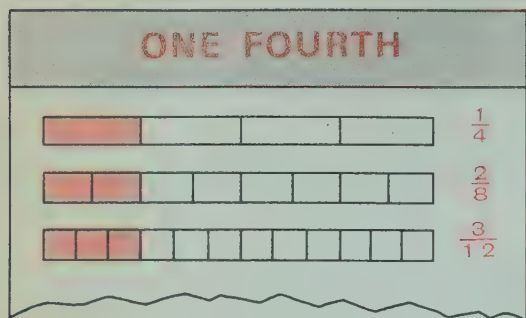


The jump is $\frac{3}{5}$ of the way from 0 to 1.

For each set of
equivalent fractions

we think of **one
fractional number**

and **one point** on
the number line.

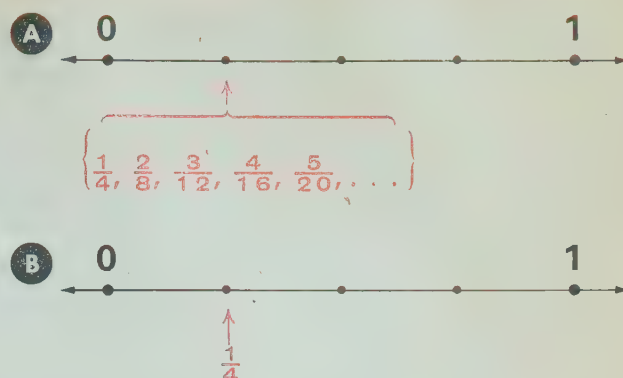


For each set of equivalent fractions there is one fractional number. Put a ring around the point for the number.

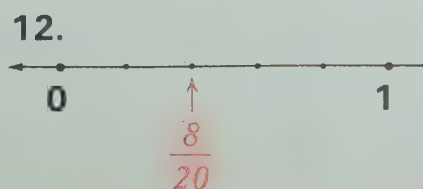
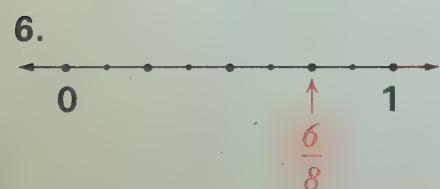
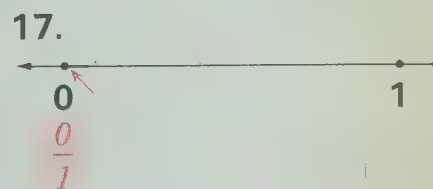
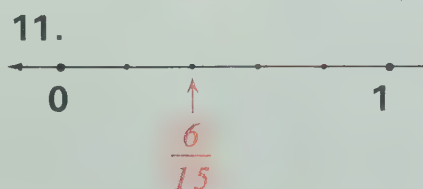
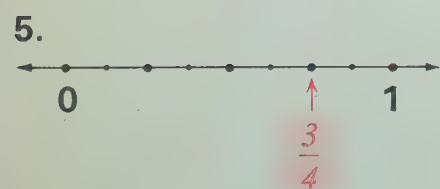
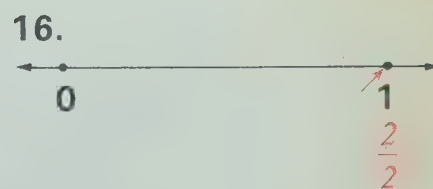
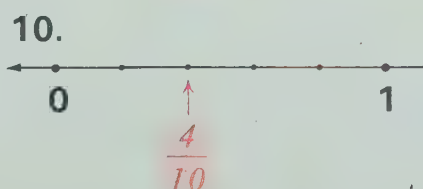
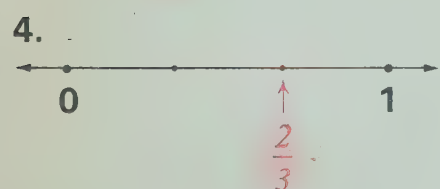
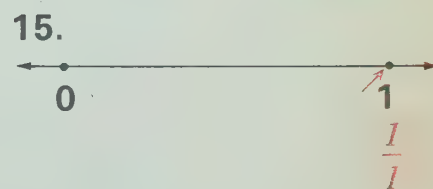
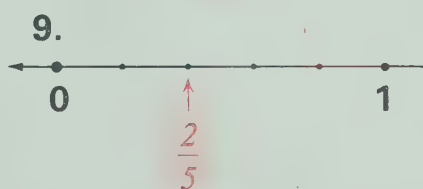
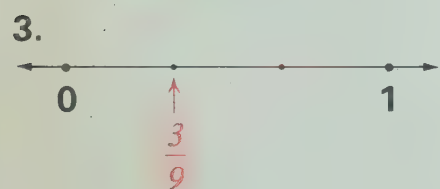
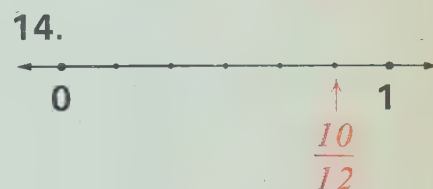
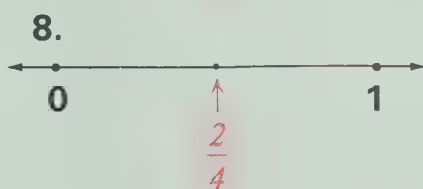
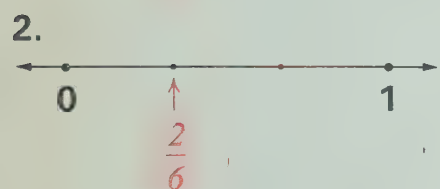
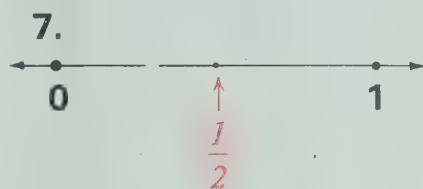
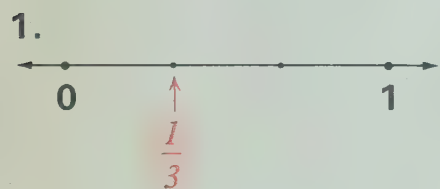
	Set of equivalent fractions for the number	Which point on the number line goes with the fractional number?
1.	$\{\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \dots\}$	
2.	$\{\frac{1}{5}, \frac{2}{10}, \frac{3}{15}, \frac{4}{20}, \dots\}$	
3.	$\{\frac{3}{4}, \frac{6}{8}, \frac{9}{12}, \frac{12}{16}, \dots\}$	
4.	$\{\frac{3}{5}, \frac{6}{10}, \frac{9}{15}, \frac{12}{20}, \dots\}$	
5.	$\{\frac{1}{6}, \frac{2}{12}, \frac{3}{18}, \frac{4}{24}, \dots\}$	
6.	$\{\frac{5}{6}, \frac{10}{12}, \frac{15}{18}, \frac{20}{24}, \dots\}$	
7.	$\{\frac{3}{8}, \frac{6}{16}, \frac{9}{24}, \frac{12}{32}, \dots\}$	
8.	$\{\frac{7}{8}, \frac{14}{16}, \frac{12}{24}, \frac{28}{32}, \dots\}$	

Naming Fractional Numbers

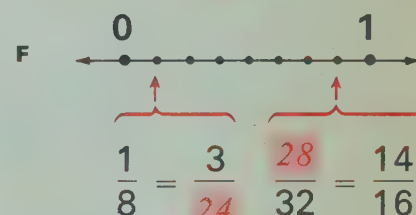
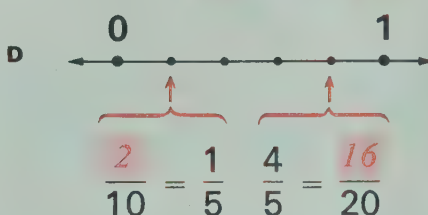
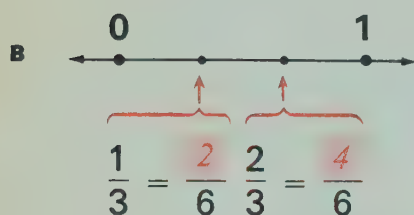
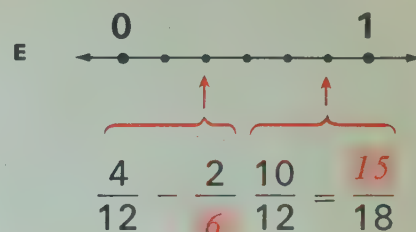
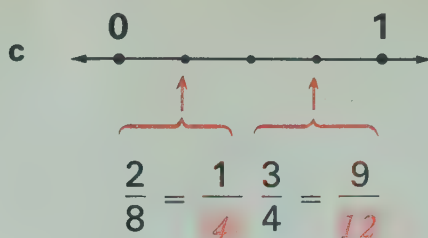
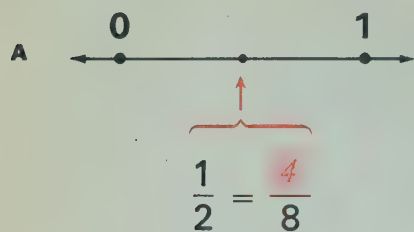
Instead of naming a fractional number by writing a set of equivalent fractions as in example A, we can use **any one** of the fractions from the set to name the fractional number, as shown in example B. We usually use the lowest-terms fraction to name the number.



In each exercise, write a fraction to name the fractional number for the point over the colored arrow. **Use a different fraction in each exercise.** *Answers may vary.*



1. If two fractions can be used to name the same fractional number, we write an equality sign (=) between them. Write the missing numerators and denominators.



2. Answer T (true) or F (false).

A $\frac{1}{3}$ is equivalent to $\frac{3}{9}$. T

E $\frac{1}{3} = \frac{3}{9}$ T

I $\frac{4}{5} = \frac{8}{10}$ T

B $\frac{3}{4}$ is equivalent to $\frac{8}{12}$. F

F $\frac{3}{4} = \frac{8}{12}$ F

J $\frac{4}{9} = \frac{5}{8}$ F

C $\frac{2}{7}$ is equivalent to $\frac{1}{4}$. F

G $\frac{2}{7} = \frac{1}{4}$ F

K $\frac{5}{8} = \frac{4}{7}$ F

D $\frac{3}{5}$ is equivalent to $\frac{9}{15}$. T

H $\frac{3}{5} = \frac{9}{15}$ T

L $\frac{3}{8} = \frac{9}{24}$ T

CHANGE OF PACE

142 857 is another interesting number. When you multiply the number by 1, 2, 3, 4, 5, or 6, you can read the answer on this dial.

For example, to read the answer for $1 \times 142\,857$ you start at the arrow and read "142 857" going clockwise around the dial.



Find the products below and mark an arrow on each dial that shows where you start to read the answer.

A

$$\begin{array}{r} 142\,857 \\ \times 2 \\ \hline 285\,714 \end{array}$$

B

$$\begin{array}{r} 142\,857 \\ \times 3 \\ \hline 428\,571 \end{array}$$

C


$$\begin{array}{r} 142\,857 \\ \times 4 \\ \hline 571\,428 \end{array}$$

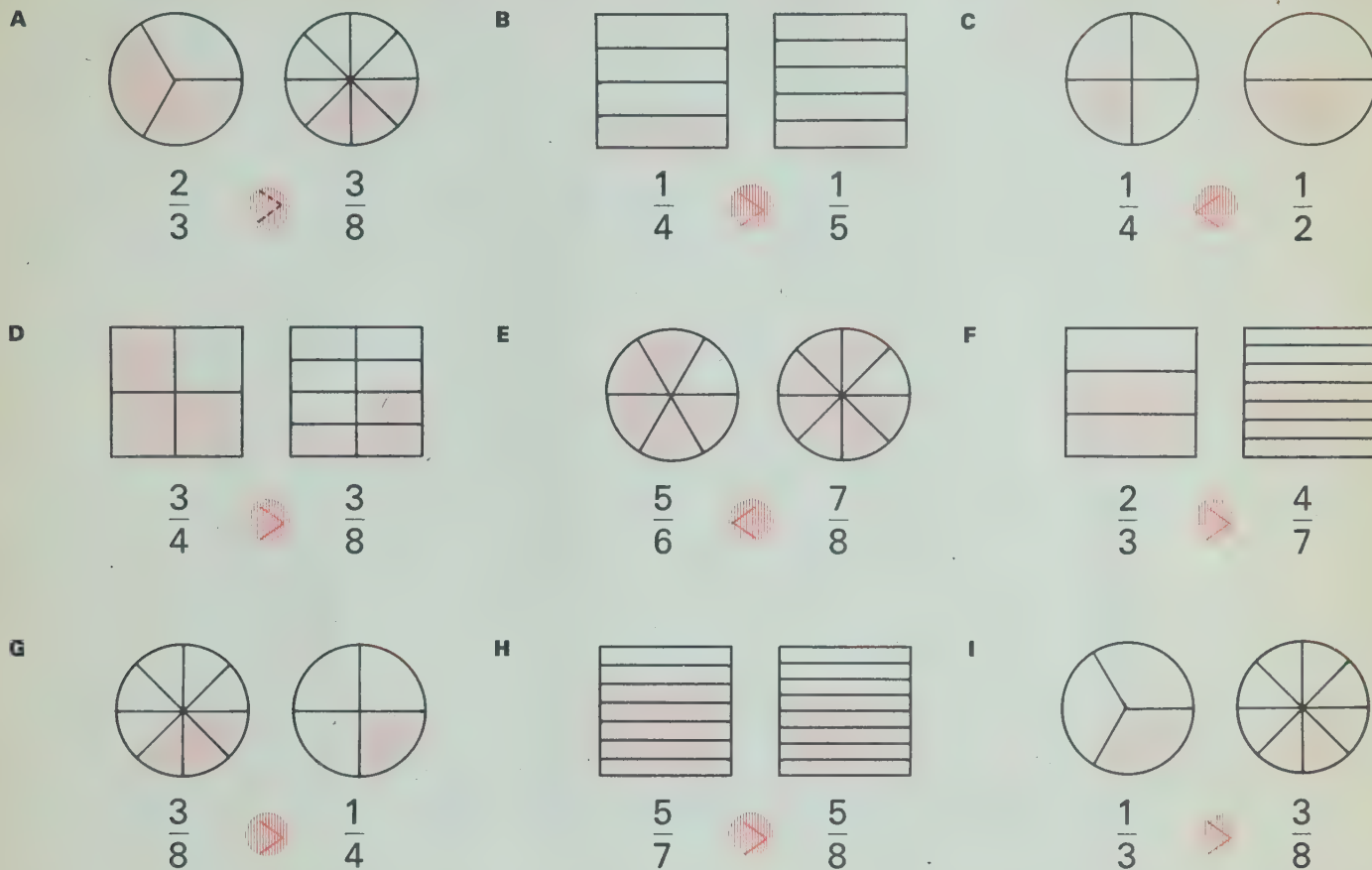
D


$$\begin{array}{r} 142\,857 \\ \times 5 \\ \hline 714\,285 \end{array}$$

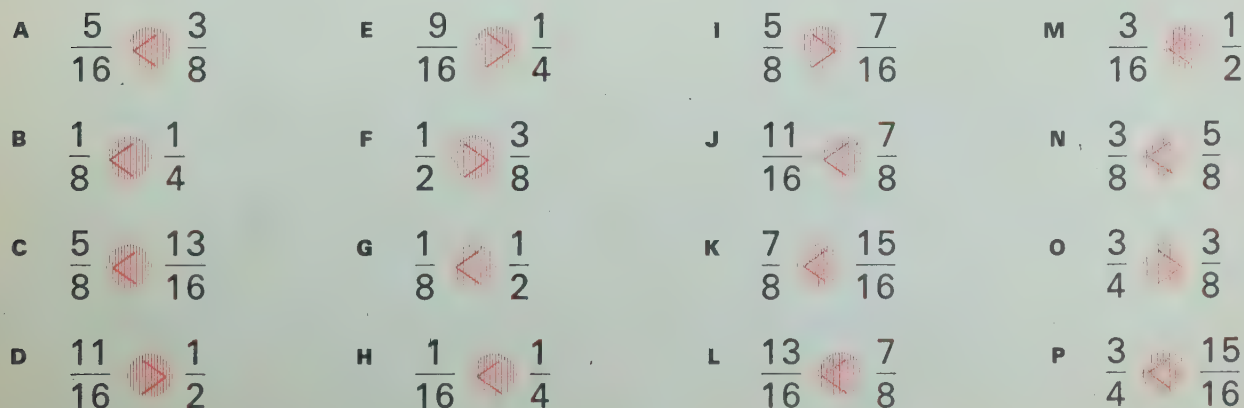
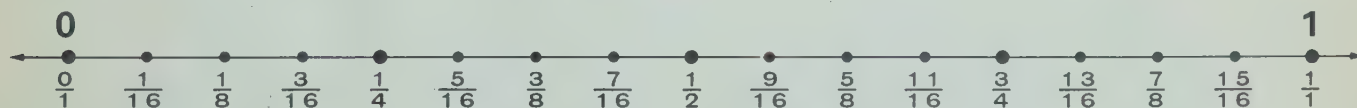
E

$$\begin{array}{r} 142\,857 \\ \times 6 \\ \hline 857\,142 \end{array}$$

1. The shaded part of each region will help you tell which fractional number is greater. Write the correct sign ($<$ or $>$) in each .

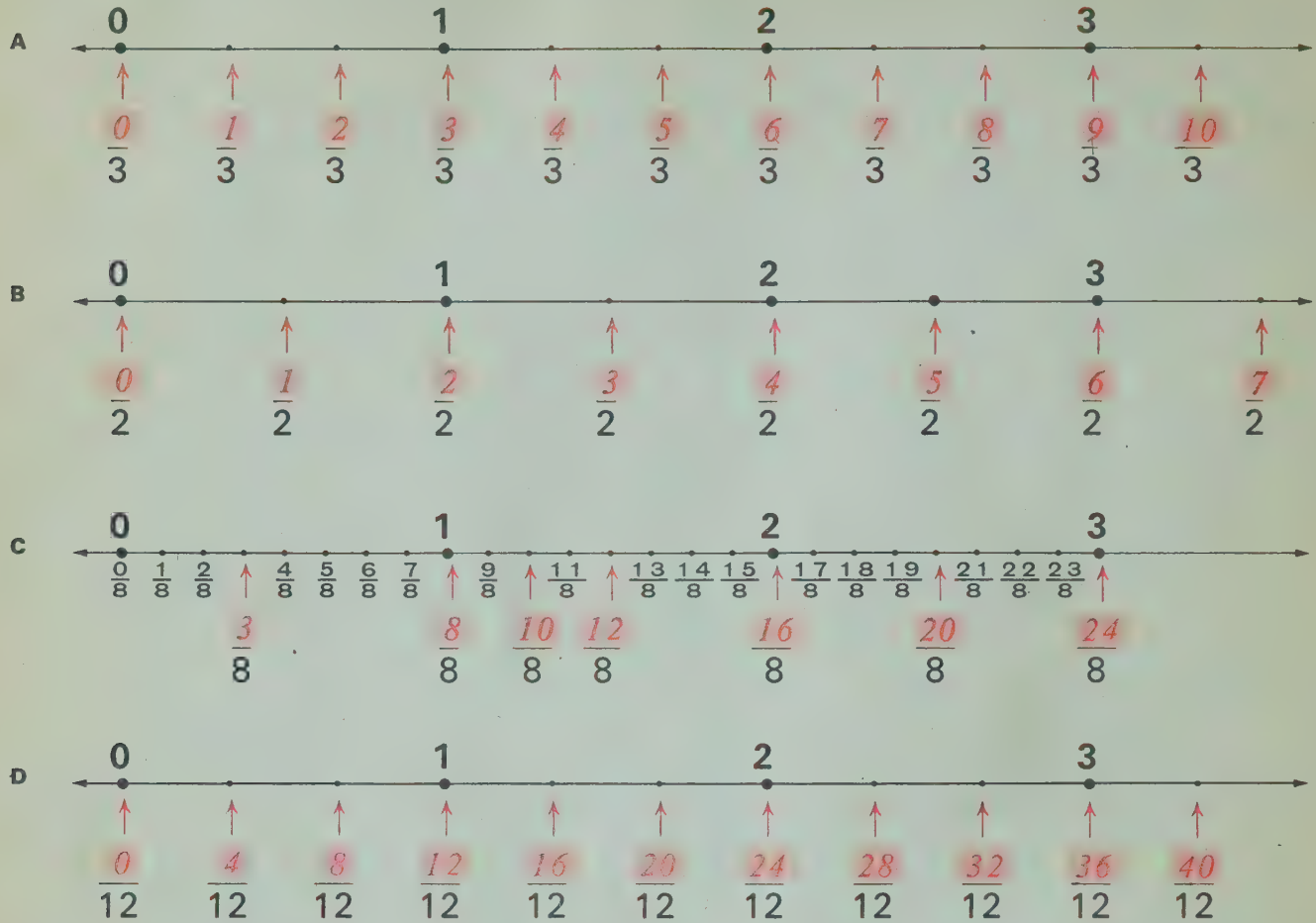


2. The number line will help you tell which fractional number is greater. Write the correct sign ($<$ or $>$) in each .



Naming Fractional Numbers Greater than 1

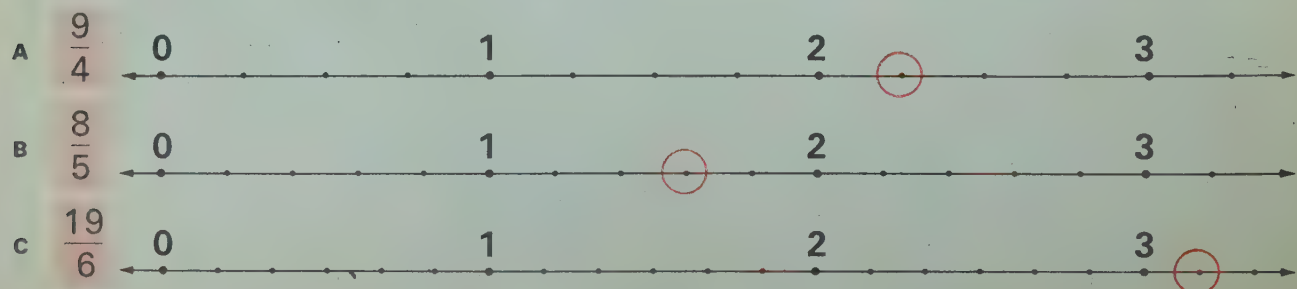
1. Give the missing numerators.



2. Give the missing numbers. The number lines above will help you.

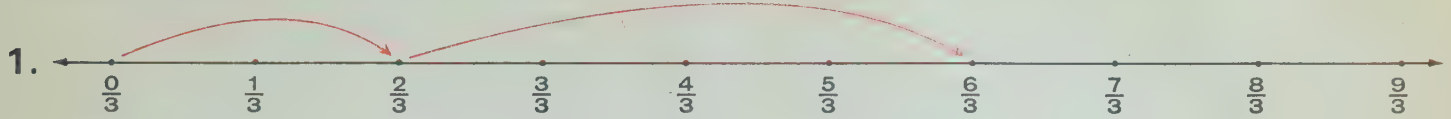
A $2 = \frac{6}{3}$	D $1 = \frac{8}{8}$	G $3 = \frac{36}{12}$	J $2 = \frac{16}{8}$
B $3 = \frac{24}{8}$	E $3 = \frac{6}{2}$	H $0 = \frac{0}{3}$	K $\frac{9}{3} = 3$
C $\frac{36}{12} = 3$	F $2 = \frac{24}{12}$	I $\frac{3}{3} = \frac{2}{2}$	L $\frac{6}{2} = 3$

3. Put a ring around the point on the number line for each fractional number given.

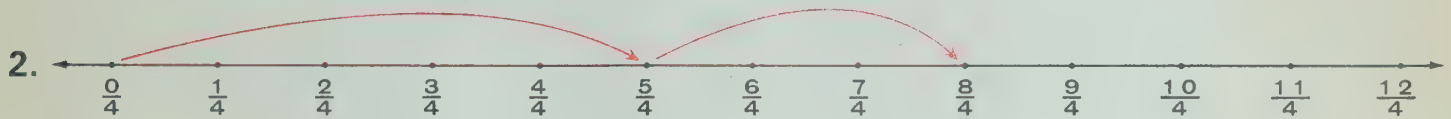


● Adding Fractional Numbers

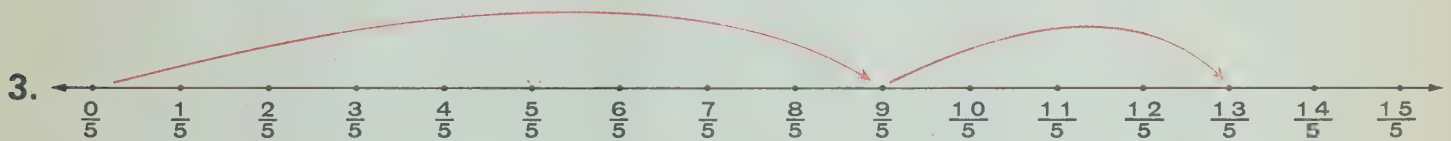
The number lines below will help you think about adding fractional numbers. Give the missing numbers.



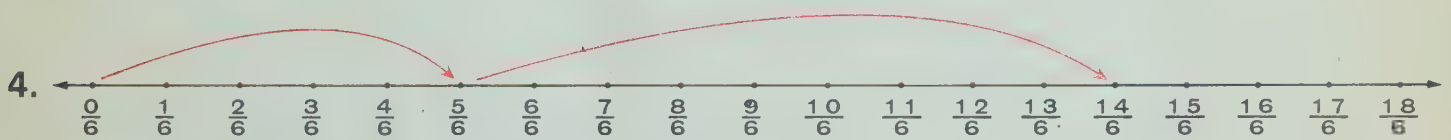
First jump 2 thirds. Then jump 4 more thirds. $\frac{2}{3} + \frac{4}{3} = \frac{6}{3}$



First jump 5 fourths. Then jump 3 more fourths. $\frac{5}{4} + \frac{3}{4} = \frac{8}{4}$

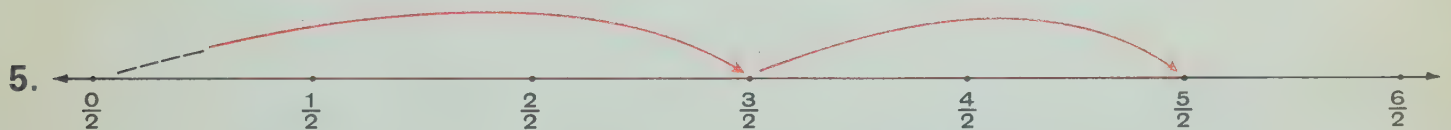


First jump 9 fifths. Then jump 4 more fifths. $\frac{9}{5} + \frac{4}{5} = \frac{13}{5}$

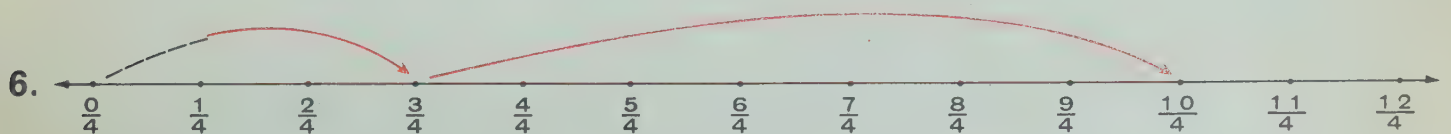


First jump 5 sixths. Then jump 9 more sixths. $\frac{5}{6} + \frac{9}{6} = \frac{14}{6}$

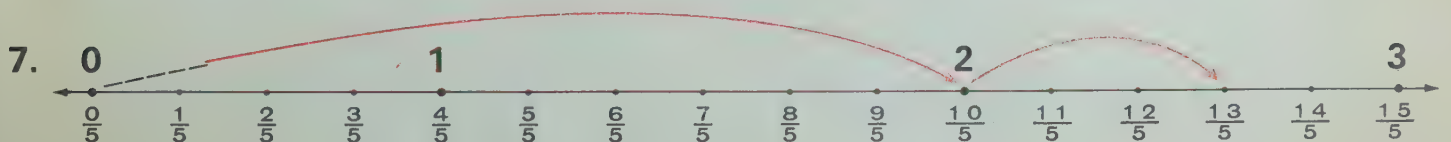
For exercises 5 through 7, complete the jumps on each number line. Then give the sum.



First jump 3 halves. Then jump 2 halves. $\frac{3}{2} + \frac{2}{2} = \frac{5}{2}$



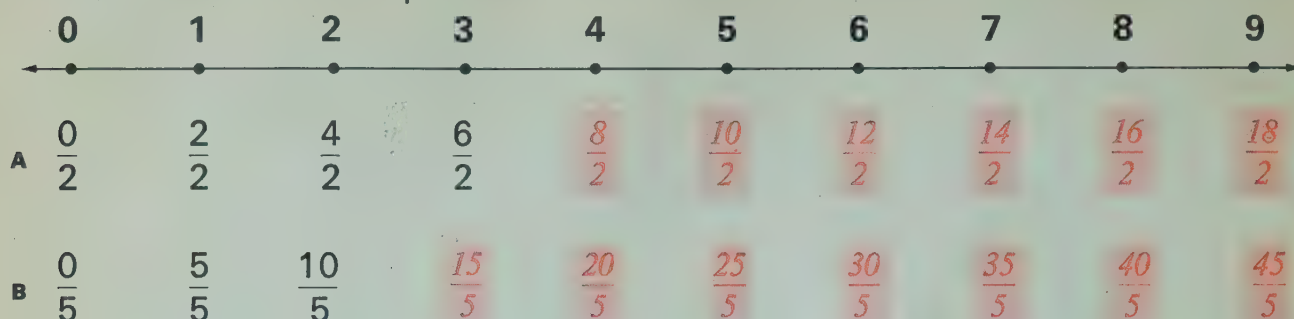
First jump 3 fourths. Then jump 7 fourths. $\frac{3}{4} + \frac{7}{4} = \frac{10}{4}$



First jump 2. Then jump $\frac{3}{5}$. $2 + \frac{3}{5} = \frac{13}{5}$

● Whole Numbers, Fractions, and Mixed Numerals

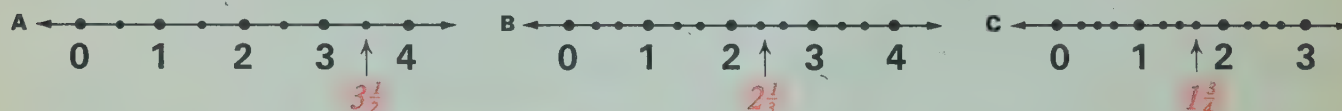
1. We can use fractions to name a whole number. Give the missing fractions for the "whole number" points on the number line below.



2. Give the missing numerator for each fraction.

A $1 = \frac{2}{2}$	C $0 = \frac{0}{2}$	E $1 = \frac{3}{3}$	G $7 = \frac{28}{4}$	I $0 = \frac{0}{5}$
B $5 = \frac{10}{2}$	D $2 = \frac{6}{3}$	F $3 = \frac{9}{3}$	H $1 = \frac{4}{4}$	J $9 = \frac{45}{5}$

3. Numerals such as $3\frac{1}{2}$ are called **mixed numerals**. Write the mixed numeral for the point over the colored arrow.



4. The mixed numeral $3\frac{1}{2}$ means $3 + \frac{1}{2}$. Give the correct number for each blank.

A $3\frac{1}{4}$ means $3 + \frac{1}{4}$	C $2\frac{1}{7} = 2 + \frac{1}{7}$	E $8\frac{3}{4} = 8 + \frac{3}{4}$
B $2\frac{1}{5}$ means $2 + \frac{1}{5}$	D $4\frac{1}{6} = 4 + \frac{1}{6}$	F $5\frac{1}{6} = 5 + \frac{1}{6}$

5. Give the correct numerator in each . Then write the improper fraction in each blank.

A $1\frac{1}{2} = \frac{2}{2} + \frac{1}{2} = \frac{3}{2}$	C $1\frac{1}{3} = \frac{3}{3} + \frac{1}{3} = \frac{4}{3}$	E $2\frac{1}{4} = \frac{8}{4} + \frac{1}{4} = \frac{9}{4}$
B $2\frac{1}{2} = \frac{4}{2} + \frac{1}{2} = \frac{5}{2}$	D $2\frac{1}{3} = \frac{6}{3} + \frac{1}{3} = \frac{7}{3}$	F $3\frac{1}{5} = \frac{15}{5} + \frac{1}{5} = \frac{16}{5}$

6. Give a mixed numeral for each fraction.

A $\frac{7}{2}$ $3\frac{1}{2}$	B $\frac{5}{3}$ $1\frac{2}{3}$	C $\frac{7}{4}$ $1\frac{3}{4}$	D $\frac{11}{5}$ $2\frac{1}{5}$
--------------------------------	--------------------------------	--------------------------------	---------------------------------

1. Give a mixed numeral for each sum.

A $3 + \frac{1}{5} = 3\frac{1}{5}$

C $\frac{1}{3} + 8 = 8\frac{1}{3}$

E $2 + \frac{5}{6} = 2\frac{5}{6}$

B $1 + \frac{3}{7} = 1\frac{3}{7}$

D $3 + \frac{9}{10} = 3\frac{9}{10}$

F $7 + \frac{1}{6} = 7\frac{1}{6}$

2. Give an improper fraction for each sum.

A $\frac{1}{5} + \frac{4}{5} = \frac{5}{5}$

C $\frac{3}{5} + \frac{3}{5} = \frac{6}{5}$

E $\frac{3}{4} + \frac{5}{4} = \frac{8}{4}$

B $\frac{3}{4} + \frac{2}{4} = \frac{5}{4}$

D $\frac{7}{6} + \frac{5}{6} = \frac{12}{6}$

F $\frac{6}{5} + \frac{0}{5} = \frac{6}{5}$

3. Give a whole number or a mixed numeral for each sum.

A $\frac{1}{5} + \frac{4}{5} = 1$

C $\frac{3}{5} + \frac{3}{5} = 1\frac{1}{5}$

E $1\frac{3}{4} + \frac{5}{4} = 3$

B $\frac{3}{4} + \frac{2}{4} = 1\frac{1}{4}$

D $\frac{7}{6} + \frac{5}{6} = 2$

F $1\frac{1}{2} + 0 = 1\frac{1}{2}$

4. Give the missing numerator for each fraction.

A $\frac{1}{2} = \frac{2}{4}$

C $\frac{1}{5} = \frac{2}{10}$

E $\frac{1}{2} = \frac{3}{6}$

B $\frac{1}{2} = \frac{4}{8}$

D $\frac{1}{3} = \frac{4}{12}$

F $\frac{1}{3} = \frac{2}{6}$

5. Use the fractions in exercise 4 to help you find the sums.

A $\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$

C $\frac{1}{5} + \frac{7}{10} = \frac{9}{10}$

E $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$

B $1\frac{1}{2} + \frac{1}{8} = 1\frac{5}{8}$

D $\frac{1}{3} + \frac{7}{12} = \frac{11}{12}$

F $1\frac{1}{3} + 2\frac{1}{2} = 3\frac{5}{6}$

6. Solve each story problem.

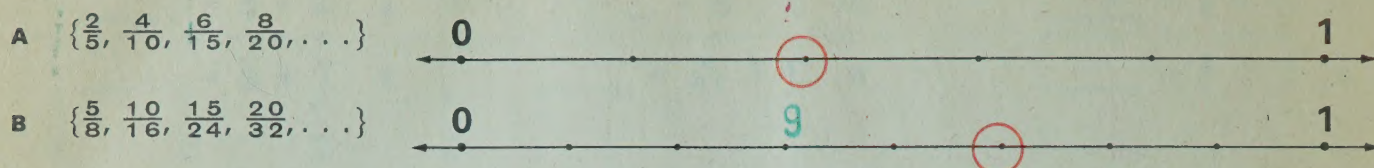
A Tom's green pencil is $5\frac{1}{4}$ cm long.
Jeff's pencil is $4\frac{3}{4}$ cm long.
What is their combined

lengths? 10 cm

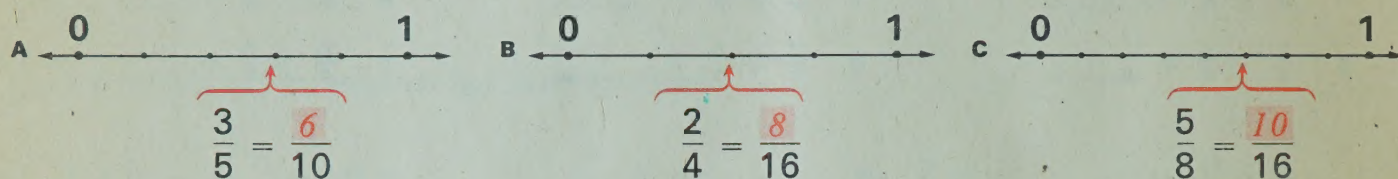
B Ann bought $\frac{1}{2}$ kilogram of cashews.
and $1\frac{1}{4}$ kilograms of peanuts.
How many kilograms of nuts did


she buy? $1\frac{3}{4}\text{ kilograms}$

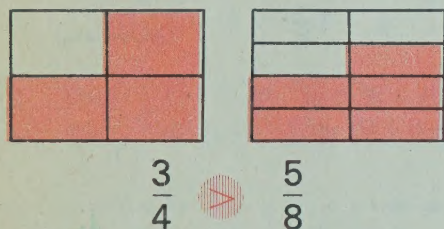
1. Put a ring around the point on the number line for the number indicated by the set of equivalent fractions.



2. Give the correct numerator so that both fractions name the same fractional number.



3. Write the correct sign ($<$ or $>$) in the . 4. Give the missing numbers.



A $3 = \frac{6}{2}$ C $\frac{12}{4} = \underline{3}$

B $\frac{8}{4} = \underline{2}$ D $\frac{10}{3} = \underline{3\frac{1}{3}}$

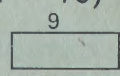
5. Find the sums.

A $\frac{3}{5} + \frac{4}{5} = \underline{\frac{7}{5} \text{ or } 1\frac{2}{5}}$ B $3 + \frac{4}{5} = \underline{3\frac{4}{5}}$ C $\frac{3}{7} + \frac{4}{7} = \underline{\frac{7}{7} \text{ or } 1}$

CHANGE OF PACE

Work the puzzle.

Across

1. 9 hundreds, 6 tens, and 5 ones
4. Number of months in a year
6. Largest number that can be written using the digits 4, 5, 6, 7, 8, 9
8. $(10 \times 10) - (1 \times 10)$
10. Area of this rectangle 
12. 3010×50
15. Perimeter of the rectangle in item 10
16. Smallest 3-digit number

Down

1. Largest 3-digit number
2. 34×20
3. A number between 55 and 59
4. Half of 30
5. 2 dozen
7. 16×4
9. $1 \times 2 \times 5$
11. 40×15
12. $2\frac{2}{5} = \frac{\quad}{5}$
13. $(8 \times 8) - 8$
14. $459 \div 9$

1 9	2 6	3 5		4 1	5 2
6 9	8	7	7 6	5	4
8 9	0		4		
		9 1		10 3	11 6
12 1	13 5	0	14 5	0	0
15 2	6		16 1	0	0

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